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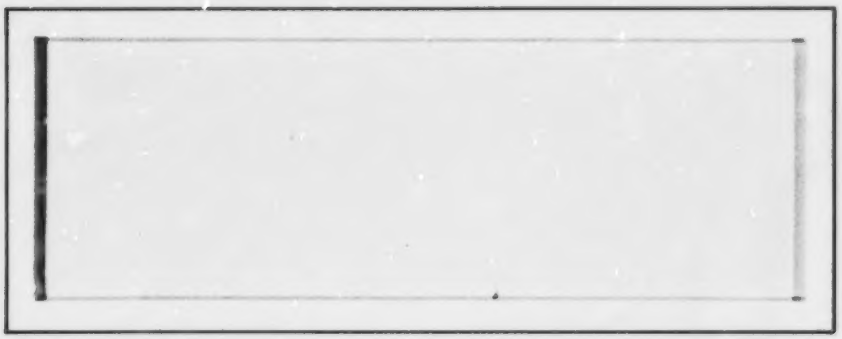

WORKING PAPER

Marketing and Economics Branch

Direction générale de la commercialisation et de l'économie

Working papers are (1) interim reports completed by the staff of the Marketing & Economics Branch, and (2) research reports completed under contract. The former reports have received limited review, and are circulated for discussion and comment. Views expressed in these papers are those of the author(s) and do not necessarily represent those of Agriculture Canada.

NORTHEAST ASIAN MARKET POTENTIAL FOR CANADIAN FOODS TO 1990 AND 1995*

(Working Paper 8/84)

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*This study was undertaken on contract to Commodity Markets Analysis Division, Marketing and Economics Branch.

PREFACE

This working paper is the result of a study on the market potential for meats, oils and fats, and cereals in four Northeast Asian countries. These four countries are Hong Kong, Japan, Republic of Korea and Taiwan. The market potential for these commodities in each of these countries is based on projections for 1990 and 1995, of population and real per capita income, utilizing income or expenditure elasticities.

The results of this study has implications for Canada's trade potential in cereals, fats and oils, and meats with these Northeast Asian countries.

This study was procured by Agriculture Canada on a contract awarded to Econolynx International Limited. The study was completed in March of 1984. The authors of this report are Keith Hay and Susanne Hill of Econolynx.

Any views expressed or implications raised are not necessarily those of the Government of Canada. Questions related to this working paper should be directed to:

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I. NORTHEAST ASIAN MARKET POTENTIAL FOR CANADIAN MEATS, OILSEEDS AND CEREALS TO 1990 AND 1995

Objectives

This study is designed to establish recent and current dietary consumption patterns in four leading East Asian nations. The countries are Hong Kong, Japan, Republic of Korea, and Taiwan. Each is an important market now and in the future for Canadian meat, oilseed and grain items.

The study projects dietary consumption patterns per caput in these four countries to 1990 and 1995, and uses these projections to estimate probable food requirements, especially for meats, oils and fats and cereal-based products. The trend towards "eating-out" is also examined.

The potential for expanding Canadian oilseed exports to these markets through 1990 and 1995 is derived from the likely demand patterns. Consideration is also given to future meat and cereal grain exports.

Outline of the Report

The study proceeds in the following way:

(1) Basic aspects of the agricultural economies of Hong Kong, Japan, Republic of Korea, and Taiwan are reviewed.

(2) The recent and current dietary consumption patterns of these countries are presented.

(3) Other factors such as relative prices which impinge on dietary patterns, plus the likely developments of "eating-out", convenience food preparation, and cultural adaptation of "Western" food are considered.

(4) Demographic trends to 1990 and 1995 (High, Medium, and Low) for the four countries.

(5) Per capita income growth rates to 1990 and 1995 (High, Medium and Low estimates) are forecast.

(6) Income elasticities of demand for key dietary components are estimated.

(7) Using (4), (5), and (6) forecasts of dietary consumption patterns are made up to 1990 and 1995 (High, Medium, Low).

(8) Projections for total volume requirements of meat, fats and oils and cereals to 1990 and 1995 are presented.

(9) Imports of agricultural products by Hong Kong, Japan, Korea, and Taiwan are noted.

(10) Canada's potential for capturing a share of forecast food requirements up to 1990 and 1995 is briefly considered.

In the sections that follow these results are presented without attempting to sidetrack the reader's attention with a great amount of detail or lengthy allusions to the literature on market forecasting in northeast Asia.

II. AGRICULTURAL PRODUCTION IN NORTHEAST ASIA

With the exception of the Republic of Korea, the evidence is clear that agriculture has been a lagging sector, at least since 1970, in Hong Kong, Taiwan, and Japan. Although evidence from World Bank, Asian Development Bank and national sources varies somewhat in the detailed picture painted, some trends are clear:

* Share of economically active population engaged in agriculture has been declining in all four countries. However, almost 40 per cent of the Korean work force, 30 per cent of Taiwanese and 10 per cent of Japanese still worked at agriculture in 1980. (see Table 1).

* Share of agriculture in GDP has been declining since 1960. In Korea it was 15.4 per cent in 1980, under 10 per cent in Taiwan and less than 5 per cent in Japan and Hong Kong. (see Table 1).

* Real value added in agriculture is contracting in Hong Kong, has plateaud in Japan, but is now rising only slowly in Taiwan and Korea. (see Tables 2 and 3).

* Mix of production has shifted slightly away from rice in Japan and towards other crops, e.g. wheat, and fruit and vegetables. In Korea and Taiwan, rice has become relatively a more important crop, while soybeans and other cereals have diminished in importance. (see Table 4).

* The proportion of food for consumption that is imported is rising in all these countries over time, although Hong Kong is now close to being wholly dependent on external sources. (see Table 5).

* Food aid is now given by OECD and multilateral agencies only to Korea. In cereals, food aid still constitutes about 8.8 per cent of Korea's total imports, but this is likely to go to zero before 1990.

TABLE 1

Selected East Asian Economies:

Basic Economic Indicators, 1980

Country	Area Km^2	Economically Active Population (%)	Share of Agriculture in GDP	Economic Activity in Agriculture/Economic Active Population (%)	Cropped Land Per Capita (ha.)	Daily Per Capita Protein Intake (grams)	Daily Per Capita Calorie Intake (calories)	Per Capita Income (US dollars)	Engel Coefficient
Hong Kong	1,050	46.8	1.0	2.5	0.00	90	2,920	5,100	27.1
Japan	372,200	47.5[a]	4.0	10.0[a]	0.05[a]	81[e]	2,912	10,080	19.5
Korea, Republic of	98,992	38.2	15.4	38.6	0.06	81	2,977	1,700	52.0
Taiwan	35,873	45.0	8.4	28.3	0.08	78	2,812	2,477	43.1

(a) 1981

(e) estimated

SOURCES: World Bank, Asian Development Bank and Far Eastern Economic Review, Asia Yearbook, various issues.

UN Yearbook of National Accounts Statistics, 1981, (UN, 1983).

Statistical Yearbook of the Republic of China (Taiwan, 1983).

TABLE 2

Selected East Asian Economies:

Value Added in Agriculture and Cereal Imports

Country	Value added in agriculture (millions of US$, 1975)		Volume of cereal imports (thousands of tonnes)		Food aid in cereals (thousands of tonnes)	
	1970	1981	1974	1981	1974	1981
Hong Kong	183	155	657	801	nil	nil
Japan	24,218	24,825	19,557	24,420	nil	nil
Korea , Republic of	3,995	5,610	2,679	7,687	234	678
Taiwan	1,785[a]	2,197[a]	2,490[b]	3,708[b]	n.a.	n.a.

SOURCES: World Bank and (a) and (b) below:

(a) Calculated from ADB, Key Indicators, 1983.

(b) For 1972 and 1982 excludes rice, from China Year Book, various issues.

TABLE 3

Selected East Asian Economies:

Recent Growth Rates of Agricultural Sectors

Per Cent Per Annum

Country	1971-75	1976-80	1971-82
Hong Kong	-3.0	0.5	-3.0[a]
Japan	1.8	-0.8	0.2[b]
Korea, Republic of	4.8	-1.3	3.6[c]
Taiwan	0.8	2.5	1.3

(a) 1970-81

(b) 1970-80

(c) 1971-81

SOURCES: World Bank, Asian Development Bank and Statistical Survey of Japan's Economy, 1983.

TABLE 4

Selected Asian Economies

Crop Production Mix, 1970 and 1980

(per cent)

Country	1970				1980			
	Rice	Soybeans	Wheat	Fruits and Vege-tables	Rice	Soybeans	Wheat	Fruits and Vege-tables
Hong Kong	4.6	7.6	0	87.8[a]	0	0	0	100.0
Japan	72.9	0.7	2.7	23.7	66.0	1.2	3.9	28.9
Korea, Republic of	59.0	3.4	3.3	34.3	60.8	3.1	0	36.0
Taiwan	13.4	0.1	0	86.5[b]	51.2	0	0	48.8

(a) Principally Vegetables, 77.2 per cent

(b) Principally Sweet Potatoes, 47.7 per cent

SOURCE: Calculated from Asian Development Bank data.

For the four East Asian countries under review the average index of food production per capita varies widely. Using 1969-71 as a base of 100, the 1979-81 averages were:*

Hong Kong	71
Japan	91
Korea, Republic of	126
Taiwan	94

With the exception of South Korea, each of these countries has experienced declining self-sufficiency in food supplies over the last decade. With rising expectations and a desire for a great range, if not volumes, of foods as incomes grow, these countries require mounting volumes of food imports.

Looking towards the end of the decade, these factors taken together suggest that agriculture will be a relatively less important sector in all of these countries. Even Taiwan and Korea will experience some diminution of their self-sufficiency capacity to 1990. Moreover, as land becomes more scarce, rent is rising, pushing farmers off the land or forcing them to shift into higher valued activities associated with fruit and vegetables and/or livestock raising.

---

* From World Bank data and, for Taiwan, calculated from Asian Development Bank data.

TABLE 5

Percentage of Total Food Consumption Imported

Net 1982

Country	%
Japan	30
Korea, Republic of	9
Taiwan	17
Hong Kong	85

SOURCE: FEER, Asia 1983 Yearbook, Hong Kong, 1983, pp. 8-9.

TABLE 6

Selected East Asian Economies:

Structure of Merchandise Imports, 1960 and 1980

(per cent)

YEAR	1960					1980				
Countries	Food	Fuels	Other Primary	Machinery and Equipment	Other Manufac-tures	Food	Fuels	Other Primary	Machinery and Equipment	Other Manufac-tures
Hong Kong	27	3	16	10	44	12	6	6	22	54
Japan	17	17	49	9	8	12	50	19	6	13
Korea, Republic of	10	7	25	12	46	10	30	17	22	21
Taiwan	10	5	20	35	30	7	28	14	31	20

SOURCES: World Bank and Asian Development Bank

III. FOOD CONSUMPTION PATTERNS IN NORTHEAST ASIA

It is important to recognize the very different patterns of food consumption in the four selected East Asian economies. Cultural differences come into play, but so also do local agricultural policies. Hong Kong has virtually no indigenous food producing sector to protect. Taiwan has adopted a progressive stance on food trade liberalization. Both Korea and Japan are concerned to maintain local agricultural capability for strategic and domestic political reasons. Consequently, both countries use farm income maintenance programs that feature price supports. As might be expected, the corollaries to these programs are trade policy settings on imports that feature a mix of high ad valorem tariff rates, heavy specific tariffs, trigger price mechanisms, quantitative restraints, and monopoly para-statal corporation importing. Both countries have made significant strides in liberalizing food imports, but in each nation certain domestic prices diverge widely from "world" prices for important food items e.g. beef in Japan and pork in South Korea.

Food consumption patterns for 1981 in the four countries are shown in Chart 1. The reader should bear in mind three sets of key economic variables which shape these patterns:

* prices of food relative to other consumer goods;
* relative prices of different food items to one another; and,
* overall level of per capita income and consequent potential for expenditure on food.

The food consumption patterns are in terms of kilograms per person per year and are arranged from left to right in ascending levels of per capita income.

More than two-thirds of Korean dietary intake by volume was made up of cereals and vegetables in 1981. Fruit and fish were important in the diet followed by modest quantities of dairy products and meat. Roots, sugar, eggs, fats and oils, constitute very small portions of the diet. Note that the average Korean consumes a slightly heavier volume of food annually than any of his neighbours in East Asia.

Cereals and vegetables also dominate the Taiwan dietary intake. By volume they constitute about half of the diet, but this is only about three-fifths of average Korean consumption. Fruit is widely grown in Taiwan and eaten in relatively large quantitites; higher by weight than any other of the countries. Similar quantities of meat and fish show up in the Taiwan diet. While the fish intake is comparative in <u>all</u> four countries, Taiwanese consume three times as much meat as Korean's and twice as much as Japanese. Taiwan has strong domestic chicken and pork industries. Milk and sugar are on a par with Japanese intake, and more than double Korean usage. Taiwanese use fairly weighty quantities of fats and oils, but notably less than in Hong Kong or Japan. Eggs and roots are eaten in only small quantities.

Cereal and vegetables make up a little less than 40 per cent by weight of the Hong Kong diet. Overall, the Hong Kong pattern of food consumption is balanced and nutritionally advanced. Like Taiwan, Hong Kong residents enjoy large quantities of fruit, mainly imported from the People's Republic of China and other neighbouring states. Meat consumption in Hong Kong is the highest in the region, being one and one-half times greater than the average intake in Taiwan and three times intake in Japan. As noted, fish consumption is similar in all four countries, about the same proportion of the total diet by weight. Intake of milk and sugar are similar to Taiwan. However, fats and oils usage is the highest in the region. Small amounts of eggs and roots are also consumed. The average Hong Kong resident eats notably less by weight than couterparts in Korea or Taiwan, although calories counts are virtually identical for all four countries.

Japanese food consumption patterns owe much to local taste and the severe distortions of relative prices that prevail in this sector (see Table 7). Cereals and vegetables account for over one-half of Japanese total food intake by weight. Fruit is the next most important dietary item. Fish intake is half as much again greater than meat for the average Japanese. Japanese drink the most milk in the region; marginally more than Taiwan and almost three times as much as in Korea. Sugar intake has similar comparative profile. Fats and oils consumption is significant and near the top-end for the region. Eggs and roots round out the

CHART 1

Food Consumption Patterns, 1981

(kilograms per person per year)

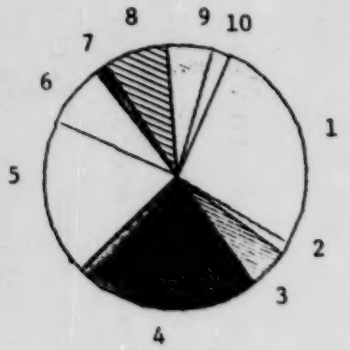
South Korea

	Kgs.	%
1.	202.6	39.1
2.	9.5	1.8
3.	8.8	1.7
4.	192.0	37.1
5.	35.8	6.9
6.	11.0	2.1
7.	4.9	0.9
8.	35.6	6.0
9.	13.2	2.5
10.	4.5	0.9

TOTAL 517.9

1981 GNP per capita in US$ $1,7000

Taiwan



	Kgs.	%
1.	137.8	26.9
2.	7.0	1.4
3.	25.4	5.0
4.	116.5	22.8
5.	98.7	19.3
6.	40.1	7.8
7.	7.9	1.5
8.	37.9	7.4
9.	28.8	5.6
10.	11.7	2.3

TOTAL 511.8

1981 GNP per capita in US$ $2,490

Hong Kong

	Kgs.	%
1.	96.2	23.6
2.	7.9	1.9
3.	19.5	4.8
4.	54.8	13.5
5.	81.8	20.1
6.	64.1	15.7
7.	12.0	2.9
8.	35.0	8.6
9.	20.7	5.1
10.	15.3	3.8

TOTAL 407.3

1981 GNP per capita in US$ $5,100

Japan

	Kgs.	%
1.	111.9	24.5
2.	17.4	3.8
3.	22.4	4.9
4.	123.2	27.0
5.	59.0	12.9
6.	22.4	4.9
7.	14.7	3.2
8.	36.5	8.0
9.	33.9	7.4
10.	14.6	3.2

TOTAL 456

1981 GNP per capita in US$ $10,080

LEGEND

1. Cereals
2. Roots Tubers
3. Sugar
4. Vegetables
5. Fruit
6. Meat
7. Eggs
8. Marine Products
9. Milk
10. Fats and Oils

TABLE 7

Relative Prices for Retail Food Items

1981

	South Korea	Taiwan	Hong Kong	Japan
1981 GNP per capita at 1981 exchange rates				
US$	1,700	2,490	5,100	10,080
Index	100.0	145.7	300.0	592.9
Beef	100.0	78.4	43.4	157.3
Pork	100.0	63.9	52.7	127.0
Chicken (1982 prices)	100.0	89.0	159.4	218.7
Eggs	100.0	108.3	129.8	155.4
Rice	100.0	58.0	56.3	161.3
Wheat Flour	100.0	159.5	121.6	229.7

SOURCES:

(a) Incomes: World Bank, World Development Report, 1983, Table 1.

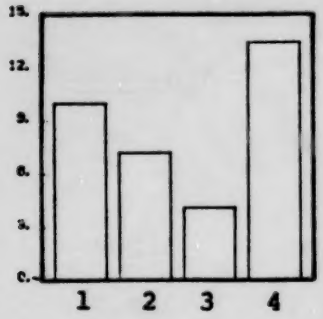
(b) Prices: East Asia: World Agricultural Regional Supplement, Review of 1982 and Outlook for 1983, Economic Research Service, USDA, Supplement 2 to WAS-31, Washington, D.C., 1983.

CHART 2

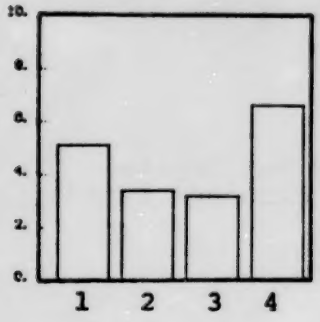
Retail Food Prices in South Korea, Taiwan, Hong Kong, Japan

(US $ per kilogram)

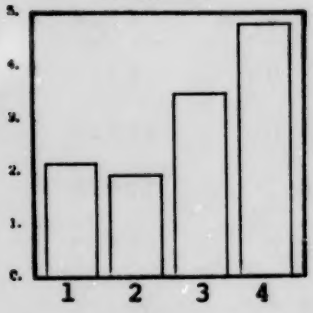
BEEF



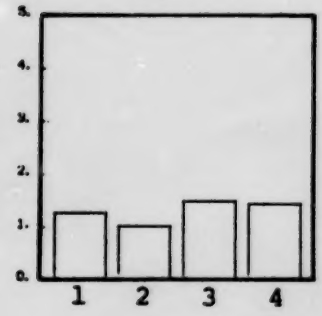
PORK



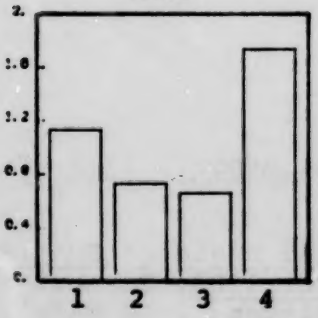
CHICKEN



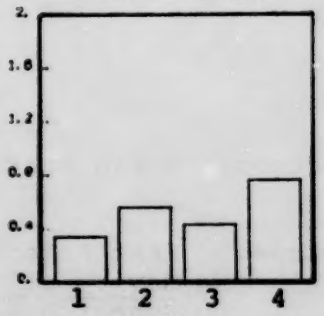
EGGS



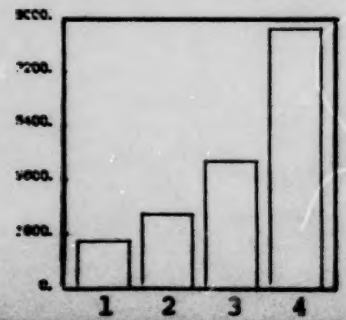
RICE



WHEAT FLOUR



Per Capita Income (US$ 1981)



1. South Korea
2. Taiwan
3. Hong Kong
4. Japan

Economies arranged in order of ascending per capita income.

Japanese diet, and for each, the average Japanese consumes a larger weight than neighbours in the other three countries. As often occurs, the higher standard of living in Japan allows consumers to achieve calorie targets through a balanced diet with less dependence on the weight/volume of cereals (and to a lesser extent--vegetables) than in neighbouring Taiwan and Korea.

Although international comparisons must be made with reference to widely differing relative price ratios (see Chart II) there is some evidence across the region of diets being upgraded as income rises. Similar evidence is available from cross-sectional budget studies taken occasionally over time within these countries. Some individual trends appear:

* Cereal intake diminishes relatively with income increase.
* Fish intake rises with income as does sugar.
* Egg intake rises with higher incomes.
* Consumption of fats and oils climbs with income, in general.
* Meat consumption can be severely distorted by pricing practices in this region.
* Overall, average per capita daily calorie supply does not vary much across the four countries in this region.

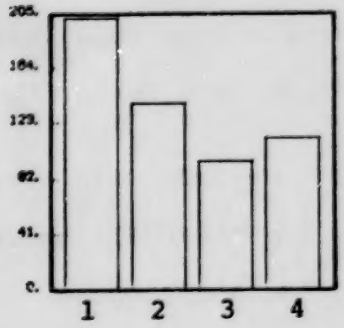
Several of these results can be seen visually in Chart 3.

CHART 3

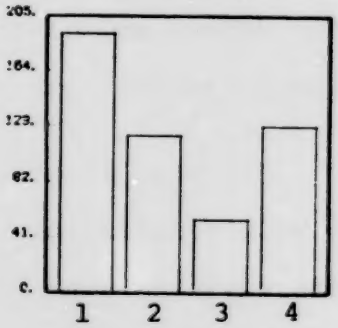
Consumption of Commodities By Country

(kilograms per person per year)

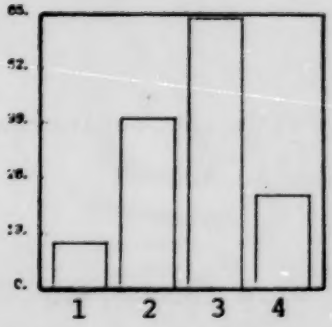
GRAIN



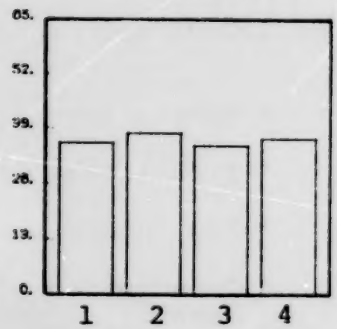
VEGETABLES



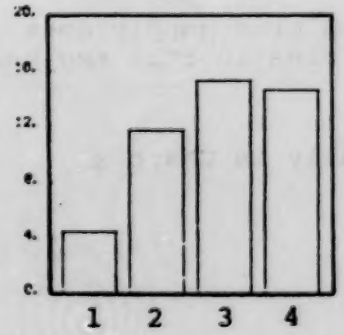
MEAT



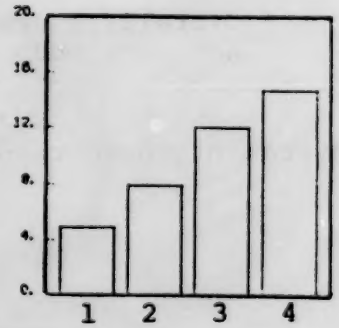
MARINE PRODUCTS



FATS AND OILS



EGGS



1. South Korea
2. Taiwan
3. Hong Kong
4. Japan

IV. OPPORTUNITIES AND CONSTRAINTS: GROWTH IN NORTHEAST ASIA TO 1990 AND 1995

Overview

The four economies of Northeast Asia have only superficial similarities. A unifying aspect is the underlying sinic culture and confuscianist philosophy. These traits account, in part, for the dedication to hard work, patience to gain results, and strong entrepreneurial spirit. Yet, even these characteristics are not homogeneous between these countries nor even among the sub regions of the three larger nations.

Hong Kong

The unusual status of Hong Kong, first as entrepot for South China and later as a light manufacturing, service centre, and free trade zone has affected local commercial mores. Hong Kong people move from project to project very quickly. Yesterday's clothier becomes today's telephone manufacturer. Indeed the pace of life in Hong Kong is faster than in Taiwan or Korea, and with the British mandate running out in 1997 some social and economic confusion is inevitable.

To cope with this situation a variety of forecasting assumptions are made:

(a) that Hong Kong's economy and sovereignty is undisturbed to 1995 and expectations are optimistic (HIGH output forecast);

(b) that Hong Kong's economy slows down after 1988 due to an outflow of entrepreneurs and reluctance to heavily re-invest in the colony's manufacturing sector; and,

(c) that the People's Republic of China gives a clear signal by 1988 of its intention to integrate Hong Kong as a province of China, thereby causing a flight of capital and labour, (LOW output and population forecast).

The health of the Hong Kong economy is highly dependent on exports. They constituted 84 per cent of GDP in 1980. Hong Kong relies heavily on US, UK, and Japan as its major export markets, while the People's Republic of China is of growing importance for re-exports. Clothing, watches, toys, textiles, and radios make up Hong Kong's export manifest. However, the colony appears to be losing its competitive advantage in these sectors to Singapore and other Asian NICs. On the import side manufactures and machines dominate, but food is also a very important item. In local currency, food imports rose by a factor of five between 1970 and 1982, while local agricultural production waned. Hong Kong no longer produces rice (in any significant amount) or any other field crops: vegetable tonnage plateaued in the mid 1970s, while chicken production rose only 50 per cent in 1970 to 1981. Hong Kong is becoming progressively more dependent on food imports; fresh produce from the People's Republic of China and Taiwan; rice, fish and vegetable oils from Southeast Asia, US, Malaysia, and Canada; dairy, meat and feedgrains from Australia, New Zealand, US, and Canada. Although the import food market is of modest volume and highly price sensitive, it requires quality food imports.

TABLE 8

Merchandise Trade Growth

Average Annual Rates

(per cent)

Country	1960-1970		1970-1981	
	Exports	Imports	Exports	Imports
Hong Kong	12.7	9.2	9.7	12.1
Japan	17.2	13.7	9.0	3.9
Korea, Republic of	33.4	20.6	22.0	10.9
Taiwan	n.a.	n.a.	19.0	14.2
Canada	10.0	9.1	4.2	5.5
US	6.0	9.8	6.5	4.4

SOURCE: World Bank and Asian Development Bank

Japan

Japan is facing an entirely different set of issues in the 1980s and 1990s. Its economy is now the major economic centripetal force in East Asia. How well Japan fares economically impacts importantly on the other three economies. Since Hong Kong, Taiwan, and Korea are all newly industrializing countries (NICs) with lower unit cost structures than Japan, they are the natural locations for many industrial activities that become uneconomic to continue in Japan. This process of transfer of standard technology to neighbouring NIC's (and beyond) has been underway for two decades. It occurs through Japanese foreign investment and technology transfer and also through entrepreneurial activities indigenous to the NICs. North America and Europe have also been important sources of funding and ideas for the "Three Little Dragons".* Japan is also an important market for products from the NICs, ranging from food and raw materials to finished manufactures. Thus, the economic progress of Japan is vital to the continued growth and prosperity of the whole Northeast Asian region.

Japan faces several problems that must be resolved in the next ten years. These include:

(a) can it control its huge government deficit;

(b) can it cope with a rapidly aging population (more capital intensive activity and changing consumer tastes);

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* See Matthews, R.A., Canada and the Little Dragons, IRPP, Ottawa, 1983.

(c) can it maintain momentum at the frontier of technology in many consumer and industrial goods;

(d) will Japan liberalize its agricultural and finance sectors;

(e) can it retain access for its exports to vital North American markets and the important ones of the European Community;

(f) will the People's Republic of China open up as a massive market for Japanese industrial goods and technology;

(g) will Japan re-arm and take on a more important defence strategic role in Asia; and,

(h) will Japan retain its political stability.

If the answers to these questions are generally positive with some constraints, then the MEDIUM forecast for Japanese output is realizable. If Japan could resolve (a) while maintaining (h) and have the People's Republic of China open up, then the HIGH output forecast could be achieved. In contrast, if (a) remains a nagging problem while (b) and (c) prove difficult and foreign trade irritants worsen with no new outlets to the People's Republic of China, then the LOW forecast for output is more reasonable. In any case, as the Japanese economy reaches a new stage of maturity in the late 1980s and fiscal and welfare constraints become more troublesome, the pace of overall growth will slacken. This means that forecast of 1991-95 will be for a lower trajectory than 1980-1990.

Although Japan has considerable internal economic dynamic, it is unlikely to escape the impact of economic cycles originating in North America before the end of this century. Thus, for the

1980s the most important "X-factor" for Japan remains the health of the US economy and the politics of North American protectionism. Even if Japan could resolve its major domestic constraints during the 1980s, a weak recovery or worse--"stop-go"--performance by the US economy for the rest of this decade would be the single most important influence on the overall performance of the Japanese economy to 1990. The same holds true of the medium term prospects for the Republic of Korea and Taiwan. Thus, at the back of much of the forecast analysis of expected performance for these three countries is view of American outlook to 1990. To detail scenarios on the US would take us beyond the scope of this report. However, a caricature of HIGH, MEDIUM, and LOW forecasts for the US to 1990 is given in Chart 4.* There is still hope for the MEDIUM scenario to be achieved, whereas the HIGH scenario may be fading from reach, and failure to resolve the US government deficit problem could plunge the economy onto the LOW "stop-go" path.

If the US manages the most likely MEDIUM scenario (or some variation upon it of 2.9-3.4% real average annual GDP growth 1985-1990 and 2.2-2.6% for 1991-1995) then this will provide a basic underpinning for Japan's MEDIUM real growth forecats (see Table 11) and similarly the MEDIUM projections for the Republic of Korea and Taiwan.

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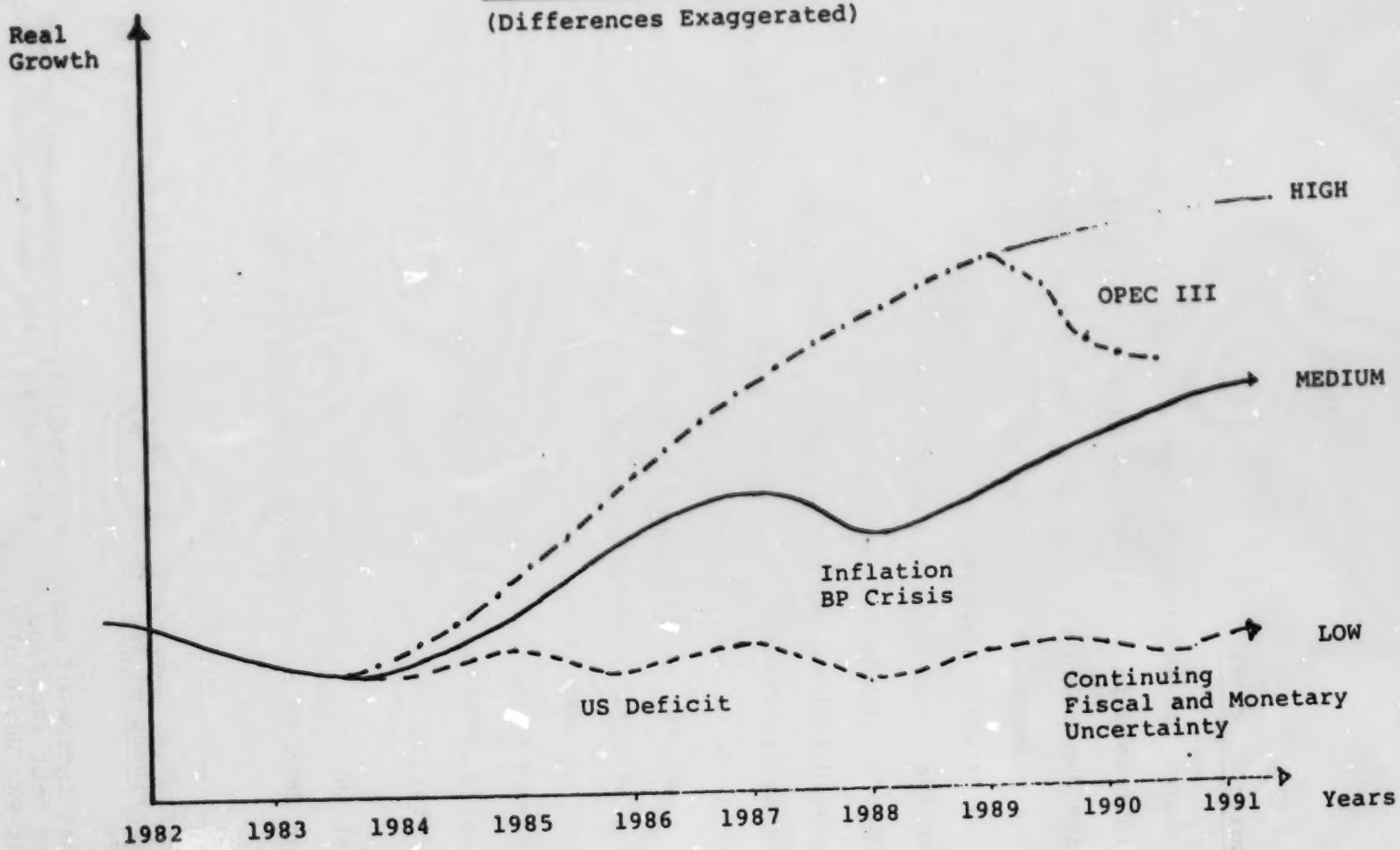
* Source: Hay, Keith, etal., Asia Future Study, CIDA, Ottawa, 1982

CHART 4

LOW, MEDIUM, AND HIGH SCENARIOS

FOR SHORT AND MEDIUM TERM

(Differences Exaggerated)



Republic of Korea

Korea has substantial opportunities to continue its strong growth record in the 1980s and 1990s. It is often said that "Korea is like Japan was 10 years ago," and there are elements of truth in this observation. The per capita income figure of US$1,700 for 1981 is deceiving and more correctly should be US$4,300 if purchasing power and the shadow price of the won are taken into account.* But the Korean economy has been more vertically integrated than either the Japanese or Taiwanese economies. Consequently, fewer sub-contractors have been required and a middle-class of entrepreneurs has developed relatively slowly. Large companies have dominated industrial processes, with varying degress of efficiency and flexibility. Korea has to devise a strategy to make its industry more responsive to domestic and international market signals in the period to 1995. To do this, the tariff, banking system and distribution sectors will all require restructuring.

At the same time, Korea has one of the heaviest loads of foreign debt in Asia which must be serviced by mounting exports.**

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* See Kravis, I.B., etal, World Product and Income: International Comparisons of Real Gross Product, Johns Hopkins U.P., Baltimore 1982.

** Gross inflow of public and publicly guaranteed medium and long term debt exceeded US$6 billion in 1981 and total outstanding debt was US$20 billion.

Lenders rate Korea highly and believe the debt can be handled providing Korea can maintain market access to its key markets in North America, Japan, and Europe. Exports constituted 40 per cent of GDP in 1981. Civil engineering projects in the Middle East were a major source of foreign exchange earnings in the 1970s and Korea has built a strong export market in Saudi Arabia. However, these markets are unlikely to expand on a large scale before the 1990s.

There is also the ever-present issue of Korea's strategic safety and the related question of political stability. Before 1995, and perhaps in the 1980s, it is fair to conjecture that there will be some favourable shifts in relations with the People's Democratic Republic of Korea and some domestic political rotation. Unforeseen difficulties on either front cannot be entirely ruled out, although these may not have more than a transitory impact on the economy.

Finally, agricultural development and dietary change in Korea depend not only on economic progess but also Korea's approach to the question of food self-sufficiency and agricultural trade liberalization. As has been noted the Korean's have a stronger taste for meat than has yet been revealed in Japan. However, the issue of a national livestock program versus importing larger volumes of meat is still unsettled. Production of wheat and barley has fallen two-thirds since 1970, while corn output is steady but small. Korea has a rice-price support system and a livestock industry para-statal corporation (market regulator) that are similar

to the Japanese models. But many Korean decision-makers recognize the high costs of this system to Japan and are looking for a more flexible system to retain rural prosperity and a high degree of food self-sufficiency. Success in achieving an improved system will not only affect overall Korean economic performance but could also mean that Korea will face fewer protectionist problems in its dealings with North America to 1995.

Taiwan

Because of Taiwan's unusual political and sovereignty status, there are few data available from United Nations sources, e.g. World Bank. For comparative purposes data from the Asian Development Bank ("Republic of China" series) and domestic Taiwanese sources are used. At the macro-level, this results in some difficulties of inter-comparison, especially with the Republic of Korea. However, all data show that Taiwan achieved remarkable output and per capita income growth results during the 1970s. Given our foregoing remarks about the US and Japan (Taiwan's first and second export markets : total exports constitute 50 per cent of Taiwan's GDP), Taiwan's continued economic progress still appears highly likely to achieve outstanding results. The Taiwan currency has historically been tied to the US dollar. Taiwan's net foreign borrowing has been relatively modest (perhaps US$6 billion) and the economy is highly flexible and reactive to external signals. By using a tariff structure that favoured the local production of parts and machine inputs while offering

end-products less protection, the Taiwanese have produced an economy with some large firms and many small and medium-size producers grown up from workshops. This structure is well-suited to the induction of advancing technology and movement up the value-added scale in manufacturing on through to 1995, as Taiwan attempts to accelerate the shift away from a labour-using toward a technology-dependent economy.

Gradual liberalization of Taiwanese agriculture brought about a steady rationalization in the 1970s with rice production holding steady, soybean and sweet potatoes declining, and citrus and watermelon expanding at the cost of bananas and pineapples. Pork is still a significant export item, and overall exports quintupled in domestic value in the 1970s whereas food imports rose by a factor of eight. It is unlikely that the general trend towards rational food production and trade would be setback in the period to 1995.

At some future date relations between Taiwan and the People's Republic of China must be clarified. It is not expected that a major change in political alignment or sovereignty would occur before 1995. If this prediction is correct, Taiwan will likely continue to enjoy an unusual degree of access to the US market, partly for geo-political reasons, and should maintain its important longstanding links with Japanese economy. These considerations suggest that MEDIUM forecast for real output to 1990 and 1995 is a feasible outcome for Taiwan.

V. FORECAST RESULTS FOR POPULATION, REAL OUTPUT AND REAL PER CAPITA OUTPUT GROWTH RATES

Outlook to 1990

In the previous section it was made clear that the results for Hong Kong, Japan, Korea and Taiwan depend on a number of important qualitative and quantitative factors. To a considerable extent, each of these economies is foreign trade driven, ranging from Japan with a 13.5 per cent 1981 dependence on exports (cf. Canada 1981, 24.7 per cent) to Hong Kong with 90 per cent 1981 dependence. Thus, exports, especially to North America, and in the case of the NICs, exports to Japan are key factors. Therefore, continued prosperity of the OECD countries is crucial to their prospects for the rest of this decade. With these factors in mind, quantitative forecasts have been prepared.

(a) Population Growth

Demographic results are affected more by age structure of population, births, morbidity and mortality than economic conditions. Forecasts are given in Table 9. As might be expected, as incomes rise and are seen to continue rising, birth rates fall rapidly. Children are viewed as less a capital good today in Hong Kong, Korea, and Taiwan than in 1970. They are, therefore, in lesser demand and their consumption good aspects are now more

TABLE 9

Selected East Asian Economies:

Forecasts of Population Growth Rates

(per cent)

	1980-1990			1991-1995		
Country	High	Medium	Low	High	Medium	Low
Japan	0.8	0.6	0.4	0.7	0.55	0.4
Korea, Republic of	1.7	1.6	1.5	1.6	1.5	1.4
Taiwan	1.9	1.8	1.65	1.74	1.65	1.6
Hong Kong	1.4	1.2	0.4	1.0	0.8	-0.2

ASSUMPTIONS: Gradient model time trends fitted and checked against World Bank and Population Reference Bureau, Inc. forecasts.

Hong Kong LOW forecasts assume reintegration into the People's Republic of China is known by 1988 causing mounting out-migration. This factor also increases Taiwan LOW forecasts through in-migration.

SOURCES: World Bank and Asian Development Bank (for Taiwan historical data).

emphasized. Nevertheless, population growth rates will remain relatively high through to 1990 due to improved longevity, with Taiwan's annual growth rate roughly three times that in Japan's (MEDIUM) forecast, and Korea's about two and one half times higher.

The effects of these growth rates on population levels by 1990 are shown in Table 10. Japan will be a slow-growing aging-society while Korea will grow more rapidly and remain relatively youthful. Although only one-sixth the size of Japan's population in 1990, Taiwan's will be a young and dynamic society. These Korean and Taiwanese demographic characteristics are likely to hasten the process of "Westernization", accelerating the growing taste for "fast-food" and "eating-out" in these countries. Hong Kong's population will range around 6 million throughout the period with little change in its age profile.

(b) Real Output

The real output forecasts for the four Northeast Asian economies are given in Table 11. Key assumptions for the HIGH, MEDIUM, and LOW scenarios are given on the table and may be expanded by reviewing the country commentaries in the previous section. In general, the MEDIUM forecast should be favoured, although it takes a

TABLE 10

Selected East Asian Economies:

Forecasts of Population, 1990 and 1995

(millions)

Country	1981	1990	1995	2000
Japan	118	124	128	131
Korea, Republic of	39	45	49	52
Taiwan	18	21	23	25
Hong Kong	6	6	6	6

SOURCES: World Bank, Asian Development Bank, and Econolynx International forecasts.

TABLE 11

Selected East Asian Economies:

Forecasts of Real GDP Growth Rates

(per cent)

Country	1980-1990 High	1980-1990 Medium	1980-1990 Low	1991-1995 High	1991-1995 Medium	1991-1995 Low
Japan	7.6	6.1	4.5	7.4	5.4	3.2
Korea, Republic of	8.4	7.2	6.0	7.5	6.1	4.7
Taiwan	9.6	8.8	7.0	8.0	7.6	5.1
Hong Kong	9.0	8.5	8.0	7.6	4.8	2.0

KEY ASSUMPTIONS

HIGH: Growth in the region is dependent on Japan, and US economic performance of 3.5-3.9% real GDP p.a. growth 1985-1990, and 3% average p.a. 1991-1995; plus no oil "crisis" before 1989-1990, and then modest energy price increases.

MEDIUM: Regional growth is moderated by gradual recovery in North America including some cycles in mid-decade. Us economic performance of 2.9-3.4% real GDP p.a. 1985-1990 and 2.2-2.6%, 1991-1995.

LOW: Stop/go growth in North America, BP crises, increased protectionism, inflation and high interest rates result in average p.a. real GDP growth of 2.0-2.5% 1985-1990, and 1.6-2.0% for 1991-1995. Note X-factors, e.g. in the case of Hong Kong, reintegration into the People's Republic of China appears inevitable.

SOURCES: Historical data from World Bank and Asian Development Bank.

view that positive and negative "X-factors" will virtually cancel out on balance over the medium term.

Up to 1990, Hong Kong is seen to have the highest real growth prospects of the four countries followed by Taiwan, Korea, and Japan. All forecasts are for relatively strong performance, if not quite up to the historical norms achieved by these economies in the 1960s or 1970s. Note that the smallest economies grow fastest in these predictions. Furthermore, the achievement of growth rates of these magnitudes would:

(1) feedback positively into overall OECD economic performance;

(2) maintain the economic momentum of ASEAN;

(3) increase this region's import requirements for food, commodities, equipment, and manufactures;

(4) place some pressure on the real price of oil, but unlikely to push it over $30 per barrel in 1979 prices;

(5) relieve Asian debt management problems; and,

(6) in turn, probably induce the People's Republic of China to continue with (but not accelerate) its programs of economic rationalization.

(c) Real Output Per Capita

Combining the results from sub-sections (a) and (b) above gives a range of outcomes for growth in real output/income per capita up to 1990. In order to get the BEST and WORST case scenarios Table 12 shows the effect of

TABLE 12

Selected East Asian Economies:

Forecasts of Real Per Capita GDP Growth Rates

(per cent)

Country	1980-1990			1991-1995		
	High	Medium	Low	High	Medium	Low
Japan	7.2(6.8)	5.6	3.7(4.5)	7.0(6.7)	4.8	2.5(2.8)
Korea, Republic of	6.9(6.7)	5.6	4.3(4.5)	6.1(5.9)	4.6	3.1(3.3)
Taiwan	7.9(7.7)	7.0	5.1(5.3)	6.4(6.3)	6.0	3.4(3.5)
Hong Kong	8.6(7.6)	7.3	6.6(7.6)	8.8(6.6)	4.0	1.0(3.2)

NOTES: HIGH estimates are the HIGH output forecasts less the LOW population forecasts. However, this involves a theoretical non-sequitur to give maxima. The LOW estimates are likewise LOW output forecasts less the HIGH population forecasts to obtain a minima. The results in parentheses are more acceptable HIGH/HIGH and LOW/LOW pairings.

SOURCES: Tables 10 and 11 above.

combining the HIGH output forecast with the LOW population forecast to obtain the HIGHEST forecast, and similarily the LOW output forecast is used with the HIGH population forecast to obtain the LOWEST per capita output forecast. This procedure is slightly suspect since it assumes a potential inverse relationship between demographic change and output which is unlikely. Therefore, the HIGH/HIGH and LOW/LOW population and output pairings are shown parenthetically in Table 12. The best estimates for forecast purposes are taken to be the MEDIUM values.

When output and population forecasts are combined, Japan and Korea are forecast to have very similar real per capita growth projections to 1990 and even beyond. In our model, Korea does not close the income gap with Japan, ceteris paribus. However, up to 1990, Hong Kong real per capita income does well and so does that of Taiwan. The 1981 constant dollar values of average per capita income in 1990 with these MEDIUM growth estimates are shown in Table 12.

Outlook for 1990 to 1995

The farther ahead any forecast is made the more hazardous it becomes. Thus, projections to 1995 are more fragile than those to 1990, although the demographic trends are highly reliable. Yet

the incidence of "X-factors", e.g. the problem of Hong Kong and the People's Republic of China, can clearly have a very significant impact. This is why the spread of outcomes ("standard deviation" around mean) between HIGH and LOW usually widens over time. Moreover, from 1990 to 1995 any attempt to preview cyclical performance is doomed to failure and all prognostications have to be in strictly secular terms.

(a) Population Growth

Continued levels of prosperity reaching deeper and broader into the cross-section of society in each of the four countries would have the effect of further curtailing population growth, relative to 1980-1990 rates. Indeed, the World Bank has forecast stationary populations for Korea in 2095, Japan in 2030, and Hong Kong in 2060.* However, Hong Kong could reach this plateau by 2000 or earlier if its impending reintegration into the People's Republic of China causes an out-migration tidal wave. In any event, all four economies are expected to ease deomographic expansion from 1990 to 1995, with Japan and Korea the least affected and Taiwan and Hong Kong the most reduced. See Tables 9 and 10.

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* See World Bank, World Development Report 1983, Oxford U.P., New York, Table 19, 1983.

(b) Real Output

The demographic slowdown translates into slower real output growth. Rising labour costs, increasing expense of winning technological superiority, and maturation and satiation of certain consumer needs all point to further slowdown. The forecasts are given in Table 11. With the exception of Hong Kong, growth rates in Northeast Asia are projected to remain firm if low by the standards of the 1960s and 1970s, but this gradual levelling off must be expected.

(c) Real Output Per Capita

The process of four economies gradually reaching similar rates of real output per capita will continue up to 1995, with all four in a range between 4 and 6 per cent annual growth (see Table 12). For political economy reasons, Hong Kong is the laggard by 1995. The effect of these projections on personal incomes by 1995 is shown in Table 13. The degree of convergence is modest even allowing for the fact that in 1995 Korea's purchasing power corrected 1981 dollar value should be $8,800. However, it is notable that the average Japanese will have an income almost double that of a 1981 Canadian, while those in Hong Kong will be at levels similar to 1981 Canadian incomes. Koreans may have

TABLE 13

Selected East Asian Economies:

Forecasts of Per Capita Income, 1990-1995

(per capita real (1981) GDP, US dollars)

Country	1981	1990	1995
Japan	10,080	16,460	20,770
Korea, Republic of	1,690	2,761	3,457
Taiwan	2,490	4,580	6,129
Hong Kong	5,100	9,616	11,700
Canada	11,400		
US	12,820		

NOTE: The use of official exchange rates to convert national currency to US dollars does not accurately measure relative purchasing power. This is particular true where the currency is in part/whole controlled in international transactions. The UN International Comparisons Project shows the dimensions of these problems, e.g. Republic of Korea is undervalued by a factor 2.54, and even Japan by 1.1. Calculations for Hong Kong and Taiwan are not available. However, Hong Kong must be close to 1.0 because of its free trade status. Taiwan currency is tied to the US dollar, but distortions occur because of their tariff structure. See Kravis, I., World Product and Income: International Comparisons of Real Gross Product, Johns Hopkins U.P. Baltimore, 1982.

SOURCE: 1981 baseline data from World Bank and Asian Development Bank. Forecasts based on per capita income MEDIUM estimates given in Table 12.

achieved 80 per cent of that level and Taiwanese perhaps 70 per cent (both purchasing power adjusted). Thus, these markets will have grown considerably in population size and affluence in 1995, to present excellent overseas markets for high quality Canadian agricultural products.

VI. FORECAST FOOD DEMAND IN NORTHEAST ASIA TO 1990 and 1995

Method

It is possible to forecast expected food consumption in the four Northeast Asia countries on the basis of their income elasticities of demand for various food items and their projected real income growth. Sets of cross-sectional and time series data on food consumption expenditure patterns were used to estimate the relevant income elasticities. Because cross-sectional and time series based income elasticities vary,* we have drawn on both types of estimate to make our projections. Where possible, changes through time of the cross-sectional elasticities have been recognized and used in conjunction with time series elasticities to produce the forecasting income elasticity. In a few cases we were able to fit the estimated elasticities themselves to logarithmic curves to check on our chosen forecasting income elasticities.

Once a set of forecasting income elasticities by country and by product is at hand this can be multiplied to the forecast rates of real income growth (Table 11) and real per capita income growth (Table 12) to obtain the projected consumption rates. To obtain forecast income, per capita income and consumption levels, the

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* Typically, our estimates show cross-section income elasticities to be lower than those derived from time-series analysis. This is well-known phenomenon in this type of work and is not a cause for alarm. See the estimates in Appendix A.

growth rates were tied to 1981 levels and projected. This base year was chosen after general consideration of the three year period from 1980 to 1982 suggested that 1981 had the characteristics of a mid-cycle average year.

It should be recognized that the forecasting procedure employed in this report does not allow for changes in relative prices over time. Consequently, there is no allowance for substitution between competing food items, nor between food and other household expenditure items. This means that trends in per capita consumption are not systematically tracked, although some qualitative consideration is given to them. An analysis of potential price changes and their detailed implication for consumer food expenditure patterns in Northeast Asia must await future study.

Per Capita Consumption Growth

Due to data constraints, we were able to estimate time-series and/or cross-section income elasticities for only a small number of food items. These were: Meats; Fats and Oils; and Cereals. But even with this group it was not possible to obtain elasticity estimates for all countries. Nor could we divide up these rather large commodity categories into their sub-groups. Thus, meats includes: pork, chicken, beef, veal, horse, and others. Fats and oils include: animal fats, palm oil, soybean oil, canola oil, sunflowerseed oil, corn oil, and several others. Cereals includes: rice, wheat, barley, maize and some others.

TABLE 14

Selected East Asian Economies: Average Annual Forecast Rates of Per Capita Consumption Growth Meats and Fats and Oils 1980-1990 and 1991-1995

(per cent)

Using Time-Series Elasticities

Country	MEATS				FATS and OILS			
	1980-1990		1991-1995		1980-1990		1991-1995	
	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
Hong Kong	7.7		4.1		5.0		2.7	
Japan	7.3	6.4	6.3	5.5	5.7	5.0	4.8	4.3
Korea, Republic of	7.3		6.0		13.2		10.9	
Taiwan	4.9	3.8	4.2	3.2	3.3	2.7	2.8	2.3

Using Cross-Section Elasticities

Country	MEATS				FATS and OILS			
	1990		1995		1990		1995	
	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
Hong Kong	5.2	5.2	2.7	2.3	5.0		2.7	
Japan	5.2	4.1	4.0	3.5	n.a.		n.a.	
Korea, Republic of	5.7	4.7	4.7	3.9	n.a.		n.a.	
Taiwan	n.a.		n.a.		n.a.		n.a.	

SOURCES: Derived from Table 12 MEDIUM forecasts and per capita income elasticities given in Appendix A.

The results obtained for per capita consumption growth are presented in Table 14. Meat growth in Hong Kong, Korea, and Japan promises to be high (over 7 per cent annually) up to 1990. In the first half of the 1990s, Korea and Japan will continue to increase per capita intake of meats, but growing at a slower rate. Fats and oils consumption growth will be very high in Korea up to 1995. Elsewhere in the region, it will range between 3 and 5 per cent. Cereal intake will grow most slowly across the four countries, greatly influenced by the shift away from rice. The values given for Taiwan and Japan are based on wheat flour and bread consumption respectively.

As incomes rise, these economies have steadily "Westernized" their eating habits. For the most part, this affects young people first. New dietary fads which grow into sustained consumption habits often develop from eating away from home. Buying unusual food in restaurants, cafeterias, take-out shops, short-order outlets and foreign franchises have important implications for shifting consumption patterns in northeast Asia. For these reasons we have estimated the income elasticities of "meals away from home" using cross-section data from household expenditure surveys from Hong Kong, Japan, and Korea. Taiwan data were not available. In each case the income elasticities were relatively high:

Hong Kong	(1979)	= 0.947
Japan	(1979)	= 1.098
Korea	(1980)	= 1.831

These elasticities when coupled to income growth projections gave rise to very high forecasts of increased expenditure on "eating out". These projections suggest interesting markets for Western-style beef, pork, bread and cakes, and fats and oils in this region for sale to the hotel, restaurant, and institution sector over the next decade. (see Table 15).

TABLE 15

Selected East Asian Economies:

Average Annual Forecast Rates of Per Capita Expenditure Growth

1980-1990 and 1991-1995

(per cent)

MEALS OUT

Country	1980-1990	1991-1995
Hong Kong	6.94	3.80
Japan	6.16	5.20
Korea, Republic of	10.24	8.40

Average Annual Rates of Real Demand Growth

1980-1990 and 1991-1995

(per cent)

MEALS OUT

Country	1980-1990	1991-1995
Hong Kong	8.08	4.56
Japan	6.71	5.94
Korea, Republic of	16.10	13.90

SOURCES: Derived from Table 12 MEDIUM forecasts and elasticities given in Appendix A.

Meat Forecasts

Forecast growth rates of total real meat consumption are surprisingly consistent across the four countries for the period 1980-1990. Korea has the highest projected rates of growth (both Upper and Lower estimates) while Taiwan has the lowest. Projections for increases in meat demand in Japan are moderated by their pricing regime and would veer towards the Upper-end if the price support system were to be relaxed. Prospects in Hong Kong are also reasonably good for the period up to 1990.

After 1991, all meat demand growth rates are projected lower due to overall slower real income growth predicted for the region in the Nineties. Korea and Japan clearly offer the best prospects, with Taiwan and Hong Kong having much more modest forecast projections.

Using these growth rates total meat demand in tonnes is given in Table 16.* This clearly shows the very large dimensions of the Japanese meat market by 1990 and 1995 (4.5 and 6.0 million tonnes respectively). Yet by 1995 Taiwan and Korea will also be substantial markets consuming approximately 1.5 and 1.1 million tonnes respectively. For its size, Hong Kong will continue to be a very attractive meat market through to 1995, although this may be largely captive to the People's Republic of China.

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* A pessimistic forecast using the LOW growth scenario and smaller estimated elasticities is given in Appendix Tables D-1 and D-2.

TABLE 16

Selected East Asian Economies:

Average Annual Rates of Real Demand Growth

Meats and Fats and Oils

1980-1990 and 1991-1995

(per cent)

Country	MEATS				FATS and OILS			
	1980-1990		1991-1995		1980-1990		1991-1995	
	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
Hong Kong	9.0	5.0	5.1	2.9	5.8		3.3	
Japan	8.0	4.5	7.1	4.0	6.2	5.5	5.5	4.9
Korea, Republic of	9.4	6.1	7.9	5.1	17.0		14.3	
Taiwan	6.2	4.8	5.3	4.1	4.1	3.3	3.6	2.9

NOTE: The growth rates in this Table were estimated using the MEDIUM forecasts of real GDP growth from Table 11 and the upper and lower elasticities (time series and cross-section) from Appendix A.

TABLE 17

Selected East Asian Economies:

Total Meat Consumption

Forecasts for 1990 and 1995

(000 tonnes)

Country	1981	1990[a]	1995[a]
Hong Kong	333.3	612.8	745.6
Japan	2,634.2	4,545.8	5,941.2
Korea, Republic of	427.9	803.4	1,100.7
Taiwan	720.6	1,166.4	1,467.5

NOTE: (a) Projections in these columns are obtained by applying the mid-point of Upper and Lower growth estimates given in Table 16 to the 1981 tonnage column.

Per capita estimates are given in Table C-1.

Fats and Oils Forecasts

Total regional fats and oils requirements are projected to increase rapidly during the period from 1981 to 1990.* Both Hong Kong and Japan show strong growth, and Korea should make a substantial jump to more than quadruple the 1981 level by 1990 (from 0.2 to 0.84 million tonnes). The Taiwan fats and oils market was slightly larger than Korea's in 1981. But since it will grow the least of all four countries up to 1990, Taiwan is projected to be far behind in size to Korea by 1990. For obvious reasons Hong Kong will remain the smallest market for fats and oils, and Japan by far the largest.

After 1991, total regional fats and oils demand growth will begin to taper off compared to the previous decade. Hong Kong will show little increase, nor will Taiwan. Hong Kong will not catch up to Taiwan's 1981 fats and oils demand levels. Korea, as before, shows the greatest increase relative to the 1990 projected requirement. By 1995, Japanese needs for fats and oils will be by far the largest market, more than two and a half times the projected 1995 level of Korea.

If projected levels for total fats and oils are indeed reached, Japan and Korea will show excellent opportunities for market development. Combined, Japan and Korea will account by 1995 for 90 per cent of the projected total fats and oils requirements amongst all four countries here analyzed.

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* A pessimistic forecast using the LOW growth scenario and smallest estimated elasticities is given in Tables D-1 and D-2.

TABLE 18

Selected East Asian Economies:

Total Fats and Oils Consumption

Forecasts for 1990 and 1995

(millions of tonnes)

Country	1981	1990[a]	1995[a]
Hong Kong	0.097	0.165	0.194
Japan	1.82	3.200	4.118
Korea, Republic of	0.205	0.843	1.646
Taiwan	0.218	0.302	0.355

NOTE: (a) Projections in these columns are obtained by applying the mid-point Upper and Lower growth estimates given in Table 14 to the 1981 tonnage column.

Per capita estimates are given in Table C-2.

Cereals Forecasts

Total cereals consumption is forecast to grow modestly in the region between 1981 and 1990.* Taiwan has the highest projected rate of growth while Korea has the lowest. Even with its projected growth however, Taiwan stays at less than half of Korea's forecast requirements, and Korea remains slightly more than half that of Japan. The actual tonnage requirements are shown in Table .

After 1991, total demand for rice by consumers will continue to fall as diets are diversified away from rice. Japan will remain by far the largest market of cereals, mostly domestically supplied. By 1995, neither Korea nor Taiwan will have caught up to Japan's 1981 levels. Taiwan's requirements for cereals in 1995 will approach a level doubling of that in 1981. Korean cereal requirements will stay between those of Japan and Taiwan. Overall, the Korean requirement will show slow but steady growth.

Japan dominates the regional cereal market. Its total requirements will rise from 13 million tonnes in 1981 to 19 million tonnes by 1995. Considering the size of growth projected for Taiwan, it will be an attractive, yet small market. The Korean market is not expected to blossom with many new cereals opportunities by 1995.

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* A pessimistic forecast using the LOW growth scenario and smallest estimated elasticities is given in Tables D-1 and D-2.

TABLE 19

Selected East Asian Economies:

Average Annual Forecast Rates of Per Capita Consumption Growth

1980-1990 and 1991-1995

(per cent)

Using Cross-Section Elasticities

CEREALS

Country	1980-1990	1991-1995
Japan	2.52	2.16
Korea, Republic of	1.40	1.15
Taiwan	3.92	3.36

Average Annual Rates of Real Demand Growth

1980-1990 and 1991-1995

(per cent)

Using Cross-Section Elasticities

CEREALS

Country	1980-1990	1991-1995
Japan	2.75	2.43
Korea, Republic of	1.80	1.53
Taiwan	4.93	4.26

SOURCES: Derived from Table 11 MEDIUM forecasts and elasticities given in Appendix A.

TABLE 20

Selected East Asian Economies:

Total Cereals Consumption

Forecasts for 1990 and 1995

(millions of tonnes)

Country	1981	1990[a]	1995[a]
Japan	13.56	17.24	19.18
Korea, Republic of	8.04	9.44	10.00
Taiwan	2.60	4.00	4.72

NOTE: (a) Projections in these columns are obtained by applying the mid-point of Upper and Lower growth estimates given in Table 19 to the 1981 tonnage column.

Per capita estimates are given in Table C-3.

VII. FOOD EXPORT TRADE OPPORTUNITIES

Agricultural Trade Overview

For the four countries as a region, agricultural imports exceeded agricultural exports in 1982 by about US$22 billion (see Table 21). Each of Hong Kong, Japan, Republic of Korea and Taiwan ran a deficit on multilateral agricultural trade account. Far and away the largest was Japan with a US$15 billion deficit, but both Hong Kong and Korea had sizeable and growing deficits of US$2.8 and US$2.4 billion, respectively. Taiwan was closest to overall balance and has the largest agricultural exports of the group. Even so Taiwan's agricultural export earnings are unlikely to keep pace with food imports as the decade goes on.

These food trade deficits are of some concern in this region. Clearly, Hong Kong can do little about them given space constraints. But for Japan and Korea, increasing food imports raise difficult issues:

* the problem of maintaining farm incomes in close relationship to non-farm incomes;
* the fragility of the domestic food processing industry in the face of international competition; and,
* the strategic question of self-sufficiency in time of external supply dislocation or war.

As a consequence of these concerns, Japan and Korea use an array of trade barriers to protect local farm producers. Evidence of these is given in Table 22. It should also be noted that Taiwan

TABLE 21

Agricultural Exports and Imports

Northeast Asia

1980-82

(US$ Millions)

Country	Exports		Imports		Trade Balance
	1980	1982	1980	1982	1982
Hong Kong	651	900	3,500	3,700	-2,800
Japan	881	1,022	17,670	16,323	-15,301
Korea, Republic of	700	552	2,990	2,949	-2,397
Taiwan	1,700	1,151	2,750	2,591	-1,440
TOTAL	3,932	3,625	26,910	25,563	-21,938

SOURCES: Food and Agricultural Organization (FAO), United Nations; Foreign Agricultural Service, USDA; and various country sources.

TABLE 22

Selected East Asian Economies

Tariff and Non-Tariff Barriers to Agricultural Imports

1983

Commodity	Japan		Taiwan		South Korea	
	Tariff	Non-tariff	Tariff	Non-tariff	Tariff	Non-tariff
	Percent		*Percent*		*Percent*	
Rice	0	G	0	c	5	G
Wheat	0	G	6.5	l	3.5	l,q
Wheat flour	25	G	30	c	30	
Barley	0	G,q	5		5	G,c
Corn for feed	0		3	l	5	l,q
Corn for non-feed use	0	[1] q	3	l	12	q
Sorghum	0		3		5	
Soybean	0		7	l	14	q
Beef	25	qi			22.5	G
Pork	7	v	75	c	25	c
Chicken meat	[2]20		65		22.5	c
Eggs, fresh	[3]20		39		30	c
Powdered milk (for food)	25-35	q	25		25	c
Apples	20	p	75		40	c
Oranges	20/40s	qi	25/75s		60	c
Garlic	5	p	52		30	c
Tallow, inedible	0		10		10	q
Palm oil	8		20		10	q

Notes:

Codes:

c = Government-controlled; normally not allowed
p = phytosanitary barriers
G = Government or quasi-Government agency the only legal importer
q = quota for the tariff rate given
qi = absolute quota limit
l = import price stabilization scheme
s = rate depends on season
v = variable levy

[1]15,000 yen/mt assessed on amount above quota. [2]Chicken legs, 15 percent; tariff will be reduced to 10 percent by 1987. [3]Eggs for hatching enter free.

SOURCE: USDA, East Asia, World Agriculture Regional Supplement, Washington, 1983.

has a formidable set of trade restraints, especially to protect its pork and chicken industries. Over time, many of these restraints should be liberalized, although thus far, the Japanese have not set a notable example to their neighbours. However, the Koreans are likely to ease their government-quota controls on meat as time goes on due to diminishing domestic supply response to meat demand. The same will likely be true of their wheat, barley and soybean imports regimes. Japanese agricultural trade liberalization is a highly political issue, due to the dependence of the ruling Liberal-Democrat Party on the rural vote, and will probably be resolved through international bilateral pressures and the GATT-MTN process.

Hong Kong Food Imports

Hong Kong's total agricultural imports in 1982 amounted to US$3.7 billion, and Canada was the eleventh most important supplier. Canadian agricultural exports to Hong Kong were worth a little over $20 million in 1982, of which about one-half was rapeseed oil and one quarter soybeans. These results are given in Tables 24 and 25. Both of these items sell in Hong Kong's burgeoning fats and oils markets. Since 1978, Canada appears to have gotten a foothold in this market with these two products which could form the basis for further expansion. As Table 18 revealed, Hong Kong's fats and oils consumption requirements will double from 1981 to 1995, thereby offering considerable scope for increased Canadian sales. Currently, Canada must rank among Hong Kong's leading suppliers of soybeans and hold about one-quarter of the imported vegetable oils market.

Modest amounts of wheat and fancy meats are sold by Canada to Hong Kong. Canada appears to be a marginal wheat supplier with sales oscillating but rarely exceeding $2.5 million in value. Hong Kong does not import large quantitites of wheat but Australia is the major supplier. Hong Kong's meat imports are growing rapidly, with P.R. China as principal vendor. In 1982, 107 thousand tonnes of meat was imported of which about one thousand tonnes came from Canada. Of the total meat imported, about one-half was poultry, one-third pigmeat and the rest beef and lamb. Hong Kong meat production has probably reached its maximum already and is now declining. Since the meat market in Hong Kong is predicted (see Table 17) to virtually double in volume requirements by 1990, and be two-and-one half times greater than 1981 by 1995, there are clearly considerable opportunities for expanded Canadian meat exports, especially of pork and its products.

In 1982, P.R. China held a 45% market share of Hong Kong's total agricultural imports, with the US at 16 per cent, EC at 7 per cent, Japan at 5 per cent, Thailand and Australia both 4 per cent, and other minor suppliers being Singapore, Pakistan, Republic of Korea, and Canada.

TABLE 23

HONG KONG

Imports of Major Agricultural Commodities

(000 Tonnes)

Year	Corn	Wheat	Meat	Soybeans	Oilseed Cake and Meal	Vegetable Oil
1970	163	159	67	20	13	35
1975	163	144	81	17	22	49
1978	252	344	113	25	25	59
1980	260	180	139	22	42	76
1981	265	170	137	21	55	81

SOURCE: FAO Trade Yearbook

TABLE 24

HONG KONG

Canadian Exports to Hong Kong

(Volume - Tonnes)

	1972	1975	1978	1981	1982	1983
Grains						
Rye	-	-				
Wheat	23,712	6,419	-	32,221	102,702	7,656
Oilseeds						
Flaxseed	-	-	-	5	27	-
Soya Beans	-	2,192	14,291	13,327	15,234	9,987
Sunflower	-	-	-	216	-	162
Feeds						
Hulls & Screening		-	-	91	-	-
Rapeseed Cake		-	-	-	32	-
Alfalfa		-	1,624	1,265	782	139
Soya Bean Oil Cake and Meal		-	800			
Oils						
Rapeseed Oil	-	590	5,592	15,937	14,774	11,322
Vegetable Oils and and Fats, nes	1,234	-	-	55	-	755
Meat						
Fancy Meats	1,162	2,343	1,337	757	1,135	1,449
Other	68	357	728	35	130	97

SOURCE: Statistics Canada - 65202

TABLE 25

HONG KONG

Canadian Exports to Hong Kong

(Value - $000)

	1972	1975	1978	1981	1982	1983
Grains						
Rye	-	-	-			
Wheat	1,602	1,271	-	814	2,694	1,779
Oilseeds						
Flaxseed	-	-	-	3	12	-
Soya Beans	-	609	4,092	5,410	5,688	3,766
Sunflower	-	-	-	84	-	54
Feeds						
Hulls & Screenings		-	-	9	-	-
Rapeseed Cake		-	-	-	9	-
Alfalfa		-	224	303	193	32
Soya Bean Oil Cake and Meal		-	200			
Oils						
Rapeseed Oil	-	216	3,676	11,708	9,924	6,856
Vegetable Oil and Fats, nes	352	-	-	32	-	437
Meat						
Fancy Meats	264	694	470	669	1,306	1,621
Other	41	326	487	50	209	161

SOURCE: Statistics Canada - 65202

Japan Food Imports

Japan is among the world's largest import markets for agricultural items, worth US$18.6 billion in 1981 and US$16.3 billion in 1982. Recent events are cyclical, and the long run outlook is for ever growing food imports by Japan. This market is mature, relatively stable, and highly quality and price conscious in its food requirements. It is also a very complex, many layered and product diversified market, about which one could write a whole book.*

The Ministry of Agriculture, Forestry, and Fisheries in Japan has high expectations for retaining self-sufficiency. Some of its forecasts to 1990 are shown in Table 26. Many of these are economic nonsense due to declining arable land and an aging/diminishing agricultural labour force, stuck with an outmoded land tenure system which works to keep farms small. However, it is the enormous factor misallocation due to the artificially high rice prices (sometimes five times world levels) that is most damaging. This farm income support system shows few signs of imminent reform. So the likelihood of self-sufficiency in wheat or soybeans increasing by 1990 is very small. Similar, the reduction of meat self-sufficiency is not correctly shown in Table 26; both beef and pork must be expected to decline quite substantially by 1990. Overall, the ratios given in this table have little to do with the economics of Japanese agriculture but much to do with politics.

* See Hay, K.A.J. and Lovatt, M.O., Canadian Food for Japan, Ottawa, 1983.

TABLE 26

JAPAN

Self-Sufficiency Ratios of Major Farm Products

(per cent)

Commodity	FY1978 (actual)	FY1990 (projected)
Rice	111	100
Wheat	6	19
Barley	14	17
Soybeans	5	8
Vegetables	97	99
Fruits	78	83
Meat	80	83
Beef	73	71
Pork	90	95
Poultry	94	96
Eggs	97	99
Milk and Milk Products	89	89
Sugar	22	32
Overall Food	73	73
Feedstuff	29	35
Grain	34	30

SOURCE: Japan; Agricultural Policy Council Report to the Prime Minister, October 1980.

TABLE 27

JAPAN

Long-Range Supply-Demand Outlook

(For Fiscal 1990; in millions of tons;
Fiscal 1978 figure in parenthesis)

Commodity	Demand	Supply
Rice	9.7 - 10.2 (11.36)	10.0 (12.58)
Wheat	6.41 (5.86)	1.22 (0.36)
Soybean	5.2 - 5.43 (4.19)	0.42 (0.19)
Vegetables	18.26 (16.85)	17.99 (16.40)
Fruits	9.35 (7.97)	7.68 (6.16)
Meat	4.73- 5.03 (3.47)	4.03 (2.76)
Beef	0.85- 0.92 (0.55)	0.63 (0.40)
Pork	1.96- 2.10 (1.46)	1.94 (1.32)
Eggs	2.25 (2.03)	2.22 (1.98)
Milk and Milk Products	9.27- 9.72 (7.01)	8.42 (6.26)

SOURCE: Japan, Agricultural Policy Council Report to the Prime Minister, October 1980.

TABLE 28

Outlook for Japan's Major Food Demand and Supply

	1980	2000
Nutrition level (per person/day)		
Calory supply (calory)	2,512	2,500 - 2,600
Domestic supply (calory)	1,360	1,360 -
Protein supply (gram)	80.7	88 - 90
Fat supply (gram)	70.1	90 - 93
Main food supply and demand		
Grain		
Per capita consumption (kg.)	113.9	88 - 94
Total demand (1,000 tons)	36,950	40,000 - 41,000
Domestic production (1,000 tons)	10,750	11,000 - 12,000
Of which rice (1,000 tons)	9,750*	8,500 - 9,000
Meat (excluding whale)		
Per capita consumption (kg.)	22.0	32 - 35
Total demand (1,000 tons)	3,690	6,000 - 6,400
Domestic production (1,000 tons)	2,980	4,900
Dairy Products		
Per capita consumption (kg.)	62.2	84 - 89
Total demand (k,000 tons)	7,560	11,000 - 12,000
Domestic (1,000 tons)	6,500	9,500 - 10,000
Cultivated land		
Total cultivatable land (1,000 ha.)	5,640	6,300 - 6,400
Of which rice (1,000 ha.)	2,350	1,500 - 1,600
Of which feed crops	1,000	1,800 - 2,000
Cultivated land (1,000 ha.)	5,460	5,500 - 5,600
Agricultural labor force		
Farm households (1,000)	4,660	3,500
Of which having full-time male farmer under 60	1,030	400

* Average annual yield is 11,120 thousand tons.

SOURCE: Long Term Prospects Committee, Prime Minister's Advisory Council on Economic Affairs, Japan, 1982.

TABLE 29

JAPAN

Production of Major Agricultural Commodities

(000 Tonnes)

Year	Rice	Wheat	Barley	Meat	Fats and Oils	Vegetable Oils
1970	12,689	474	122	1,695	1,117	100
1975	13,165	241	66	2,199	1,260	173
1978	12,589	367	54	2,781	1,733	223
1980	9,751	583	35	3,006	1,797	237
1981	10,259	587	30	3,034	1,923	294

SOURCE: Demand and Supply of Food, 1970-1981, Japan Statistical Yearbook, Prime Minister's Office.

TABLE 30

JAPAN

Imports of Major Agricultural Commodities

(000 Tonnes)

Year	Wheat	Barley	Miscellaneous Cereals	Meat	Fats and Oils	Soybeans*	Corn
1970	4,621	1,072	10,095	220	342	3,244	6,018
1975	5,715	2,117	11,561	731	363	3,334	7,470
1978	5,679	2,052	16,124	754	436	4,260	10,534
1980	5,564	2,087	17,379	738	443	4,401	12,830
1981	5,504	2,225	16,914	783	461	4,197	13,591

SOURCE: Demand and Supply of Food, 1970-1981, Japan Statistical Yearbook, Prime Minister's Office.

* FAO Trade Yearbook.

A better reasoned view of Japan's future agricultural capability is given in Table 27, prepared for the Japanese Prime Minister in 1980, although here again meat supplies appear too optimistic. Finally, Table 28 gives perhaps the most rational view to have been prepared recently in Japan.

The main items in Canada's agricultural export manifest to Japan are set out in Tables 31 and 32. Certain trends can be summarized:

* Wheat sales have stayed around 1.25 million tonnes for a decade and are now unlikely to grow spectacularly up to 1990 or beyond. Main competitors are US and Australia.

* Barley sales are growing and will grow with livestock expansion contemplated to 1995 and because of other uses. Main competitors are US, Australia, and EC.

* Buckwheat sales will grow slowly with the Japanese noodle market. Rye exports depend on our supply capability to a large extent.

* Japan is Canada's largest canola/rapeseed market and--as Table 18 suggests--there is still considerable scope for expanded sales of canola and other oilseeds through this decade.

* If Japan eases its specific tariffs against vegetable oil imports, these could boom in the second half of the 1980s. Currently, Canadian supplies are only marginal to domestic vegetable oil capabilities.

* The outlook for feeds is good, given Japan's continuing emphasis on domestic meat production. Alfalfa exports will continue to boom throughout this decade.

* Canada holds between 25 and 30 per cent of Japan's current import pork market, equivalent to about 40 thousand tonnes per annum. If, as seems likely, this share range is retained up to 1990, Canada's pork

TABLE 31

JAPAN

Canadian Exports to Japan

(Volume - Tonnes)

	1972	1975	1978	1981	1982	1983
Grains						
Barley	6 ;,398	942,820	771,113	975,844	876,836	979,538
Buckwheat	28,239	11,056	19,862	29,204	20,590	14,273
Rye	162,964	53,645	58,771	19,385	20,923	157,679
Wheat	1,232,549	1,337,320	1,196,995	1,307,847	1,219,313	1,460,720
Oilseeds						
Flaxseed	146,663	65,329	101,338	101,135	101,175	107,295
Mustardseed	6,266	9,058	6,701	7,009	8,292	7,653
Rapeseed	588,199	579,380	801,217	1,168,818	1,170,101	1,167,816
Soyabeans	-	3,723	35,301	49,360	47,413	27,208
Sunflower	5,559	-	-	308	151	194
Feeds						
Hulls & Screenings	4,282	7,247	7,226	422	3,080	3,000
Wheat Bean	32,822	45,703	78,606	70,625	61,765	78,630
Rapeseed Cake	-	-	11,822	-	395	14,679
Alfalfa	-	77,723	175,405	132,826	182,516	247,877
Vegetables Oils						
Rapeseed Oil	-	3,019	5,592	19,807	11,829	333
Vegetable Oils, nes	-	-	-	877	845	244
Flaxseed Oil	-	-	418	-	-	-

SOURCE: Statistics Canada - 65202

TABLE 32

JAPAN

Canadian Exports to Japan

(Value - $000)

	1972	1975	1978	1981	1982	1983
Grains						
Barley	35,654	125,462	90,215	191,557	136,066	142,764
Buckwheat	2,604	2,129	5,821	13,975	9,165	5,294
Rye	7,280	6,123	6,494	3,708	3,233	19,710
Wheat	86,715	259,966	190,950	354,443	290,529	339,568
Oilseeds						
Flaxseed	12,498	23,470	25,117	37,773	33,944	30,646
Mustardseed	914	2,983	2,750	2,813	3,540	2,981
Rapeseed	69,540	193,587	240,908	389,356	382,374	395,378
Soyabeans	-	1,115	9,601	16,966	14,854	8,795
Sunflower	783	-	-	200	111	138
Feeds						
Hulls & Screenings	113	485	420	40	285	257
Wheat Bean	1,471	4,235	6,860	9,941	8,155	10,195
Rapeseed Cake	-	-	1,643	-	217	2,603
Alfalfa	-	6,937	19,038	20,998	28,657	44,284
Vegetables Oils						
Rapeseed Oil	-	1,744	3,676	11,374	6,333	1,635
Vegetable Oils, nes	-	-	-	675	597	1,389
Flaxseed Oil	-	-	168	-	-	-

SOURCE: Statistics Canada - 65202

shipments could go as high as 56 thousand tonnes, providing that Canadian unit production costs, especially in packing houses, can be kept under control.**

* Beef imports by Japan may well expand but the US and Australia are likely to be the principal beneficiaries of such a move, given Canada's current modest supply capabilities to Japanese export specifications.

As is well known, increased penetration of the Japanese market by any Canadian agricultural products requires a substantial amount of front-end effort. To maintain market shares, Canadian exporters have always had to watch their international price competitiveness, logistics for getting the goods to Japan on time, and aim always for the highest possible quality of product for this extraordinarily discriminating market. Given very high Japanese per capita incomes by 1990 and beyond, quality of product will be the major dimension upon which import market share will hinge. Thus, upgrading and quality control are vital aspects of Canadian agricultural produce aimed at the Japanese market of the future.

** See Hay, K.A.J. and Lovatt, M.O., Freight Rate Adjustment Implications for Canada's Pork Trade With Japan, submitted to Agriculture Canada, March 1984.

Republic of Korea

Korea imported about US$3.0 billion in agricultural items in 1982, but this was much below the 1981 value of US$4.25 billion. By value, about one-half of all Korea's agricultural imports are regularly supplied from US sources. However, for key import items the US import market shares, by volume, are much greater (1982):

TABLE 33

	Korean Volume Imported (000 tons)	US Import Share (per cent)
Corn	2,978	97
Wheat	2,023	97
Soybeans	550	100
Rice	271	96
Tallow	150	50
Hides & Skins	135	85
Palm Oil	82	0
Beef	67	2

Much of this entrenchment can be traced to the historical use of PL 480 shipments by the US to Korea, and this will only change slowly.

Australia is the recipient of most Korean beef quotas currently and this is unlikely to change for several years to come. However, it is important to note that the Korean overall meat consumption market will almost triple in size between 1981 and 1995 (see Table 17). This demand will be met from some expansion of domestic livestock herds. But the Korean herd of draft cattle and milk cows has not increased much in size since 1978. However, chicken production virtually doubled from 1970 to 1982 as did pig output. In recent years, beef imports have grown gradually after a sizeable market

TABLE 34

KOREA

Production of Major Agricultural Commodities

(000 Tonnes)

Year	Rice	Barley	Wheat	Soybeans*	Meat Production
1970	3,939	1,974	357	232	158
1975	4,669	1,700	97	311	259
1978	5,797	1,348	36	293	337
1980	3,550	811	92	216	344
1981	5,063	828	57	257	425
1982	5,175	750	66	233	-

* Korea also produces small amounts of peanuts, sesame and rapeseed.

SOURCE: Economic Statistics Yearbook, The Bank of Korea.

TABLE 35

KOREA

Imports of Major Agricultural Commodities

(000 Tonnes)

Year	Corn	Wheat	Soybeans	Vegetable Oil	Meat
1970	241	1,216	30	0	1
1975	514	1,544	57	5	17
1978	1,878	1,664	239	19	91
1980	2,351	1,800	543	40	15
1981	3,051	1,900	494	68	58

SOURCE: FAO Trade Yearbook.

opening occurred in 1978. Sheepmeat imports peaked in 1978 and are now declining, probably due to competition from cheaper and bigger beef imports. Pork imports are as yet only sporadic, although by 1986-88 they would be expected to widen and grow rapidly, offering a good opportunity to Canadian suppliers. Looking ahead, Korea will not be able to satisfy its 1990 meat requirements domestically and must turn towards greater beef and pork imports.

Although Korea will need increasing proportions of meat imports, its domestic livestock industry should grow to 1990, especially in output of chicken and to a lesser extent pork. This will require expanded feedgrains and feed imports. Canada has had virtually no success in selling feedgrains to Korea save for feed oats sold in 1983 (see Table 36 and 37). This market should widen, but the trick will be to push the US suppliers aside somewhat. Feeds also promises some opportunities particularly rapeseed cake, alfalfa, and screenings.

Korea promises the largest growth in fats and oils consumption of the whole region; quadrupling by volume to 1990 and again doubling to 1995 (see Table 18). Currently, only about 60 thousand tonnes of vegetable oils are imported, mainly palm and coconut oil from ASEAN. Soybean imports have been around 0.5 million tonnes since 1979 and are obviously providing oil for human consumption. Rapeseed imports have grown to 25 thousand tonnes annually since 1979, and this could benefit Canada greatly in the

TABLE 36

REPUBLIC OF KOREA

Canadian Exports to Korea

(Volume - Tonnes)

	1972	1975	1978	1981	1982	1983
Grains						
Barley	966	-	-	-	-	-
Wheat	-	-	-	-	-	-
Feed Oats	-	-	-	-	-	7,835
Oilseeds						
Flaxseed	4,715	-	3,934	-	-	1,050
Rapeseed	-	-	162	23,931	26,888	-
Mustard	-	-	-	386	504	342
Soya Beans	-	-	-	687	595	36
Sunflower	-	-	-	109	-	127
Feeds						
Hulls & Screenings	-	-	-	-	-	11,024
Wheat Bran	-	-	-	-	-	-
Rapeseed Cake	-	-	-	-	4,956	26,255
Alfalfa	-	-	-	-	22	-
Vegetable Oils						
Rapeseed Oil	-	-	104	-	-	-
Vegetable Oils, nes	-	-	118	-	-	-

SOURCE: Statistics Canada - 65202

TABLE 37

REPUBLIC OF KOREA

Canadian Exports to Korea

(Value - $000)

	1972	1975	1978	1981	1982	1983
Grains						
Barley	59	-	-	-	-	-
Wheat	-	-	-	-	-	-
Feed Oats	-	-	-	-	-	859
Oilseeds						
Flaxseed	605	-	1,025	-	-	296
Rapeseed	-	-	52	7,720	9,632	-
Mustard	-	-	-	173	347	174
Soya Beans	-	-	-	330	264	18
Sunflower	-	-	-	86	-	85
Feeds						
Hulls & Screenings	-	-	-	-	-	1,368
Wheat Bran	-	-	-	-	-	-
Rapeseed Cake	-	-	-	-	1,054	5,463
Alfalfa	-	-	-	-	5	-
Vegetable Oils						
Rapeseed Oil	-	-	101	-	-	-
Vegetable Oils, nes	-	-	124	-	-	-

SOURCE: Statistics Canada - 65202

future as this market swings open wider in the second half of the 1980s. As Table 36 shows, Canada has sold a broad range of oilseeds to Korea since 1978 and this is a small base from which to build a very valuable market over the next eleven years.

The Korean import market for cereals is virtually monopolized by US suppliers currently. Moreover, growth prospects are modest with total consumption of all cereals likely to rise only about 20 per cent between 1981 and 1995 (see Table 20). Within the 10 million tonnes cereal requirement by 1995, wheat will have risen in importance, while rice will have fallen, and barley virtually disappeared. This will see some imports of wheat for baking purposes sourced from Canada, but the volume is unlikely to exceed 400 thousand tonnes by 1990.

Taiwan Food Imports

A glance at Tables 38 and 39 shows that Canada is only gradually beginning to open up a market for agricultural exports to Taiwan. In 1982, Canada held about 2.5% of their farm product import market. The recent sales growth has come in feedgrains, wheat, feeds and oilseeds. But the data in Table 40 shows that Canada is a marginal supplier to Taiwan, selling items spot in quite unpredictable quantities. Essentially, we are making up for shortfalls in Taiwanese sourcing from US and Australia.

For instance in 1982, Taiwan sourced $1.1 billion in agricultural imports from the US. Two-fifths of this was feed and livestock, about one-quarter was food and 30 per cent was

non-food for industrial end use. It is not difficult to see that these amounts give the US a two-thirds share of the rapidly growing Taiwan farm imports market and allows them to dominate the current levels of Canadian agricultural sales to Taiwan. For instance in 1982, Taiwan imported 658 thousand tons of wheat from the US, but only 28 thousand from Canada and 25 thousand from Uruguay.

Only in the sub-sector areas of barley and meats is the Canadian market share above 15 per cent and growing. These results are encouraging, given the outlook for growth of Taiwan's indigenous meat industry requirements for barley and the population's expanding tastes for meat (see Table 17).

By 1990, Taiwan's meat consumption will be 50 per cent above 1981 and by 1995 it will be more than double current levels. In 1981, Taiwan had a surplus of meat for export in gross volume of some 23.6 per cent above domestic consumption requirements. Recent livestock production growth (pork is 70 per cent of total meat produced) has been triggered by attractive import feedgrain prices. Looking ahead, Taiwan is unlikely to be able to satisfy its domestic meat consumption requirements, especially for beef, although it may still be close to self-sufficiency in pork and chicken by 1990.

These arguments suggest Canadian market opportunities in Taiwan during the 1980s and into the 1990s for:

(a) increased feedgrain shipments, especially barley;

(b) increased feeds shipment;

(c) improving markets for vegetable oils, particularly rapeseed oil; and,

(d) widening opportunities for beef sales (if available in Canada) and exports of fancy meats as the decade proceeds.

Note that Canada will be up against stiff competition from Australia in sub-market (a) above, USA in (b), Southeast Asian suppliers of various tropical oils, and Singapore and US soybean oil in (c), and Australia and the US in the meat market (d).

Market Exploration Agenda

This report has employed a cost-effective methodology to identify the likely dimensions of the food markets in four Northeast Asian economies over the next ten years. Although these market forecasts are preliminary and highly aggregate in nature, they point to some sizeable export opportunities for Canadian meat, oilseed and grains producers. These are outlined in the preceding paragraphs of this section. Given the resources available for this study, we have not been able to fully investigate the implications for the Japanese, Korean, Taiwan and Hong Kong agricultural product items of potential changes in relative prices, exchange rates, tariff schedules or non-tariff barriers to trade. Nevertheless, it is important to recognize--however difficult it may be to deal quantitatively with these factors--that further research on Northeast Asia markets will require a more detailed examination of their significance to our future trade potential.

It will also be necessary in future research to get behind the aggregate forecasts for meats, oil and fats, and cereals and break them down into outlooks for more specific commodities such as short-cut back pork, rapeseed oil and feed barley. Then, the questions will become, "What will it take to secure and/or expand Canada's share of a particular country market in a particular product?" These can be answered by examining factors at a micro level which facilitate or impede our sales. Beyond issues of sales price, frieght cost, product quality, reliability of supply and consistent availability, there are questions to be answered concerning the types of buyers in Northeast Asia, access to their channels of distribution, role of state-trading and countertrading, and types of contractual relationship favoured in this region's agricultural commerce. Further study should aim to evaluate a range of marketing strategies by product, by country with a view to identifying how Canadian agricultural producers can best gain from trading with these increasingly important markets.

TABLE 38

TAIWAN

Canadian Exports to Taiwan

(Volume - Tonnes)

	1972	1975	1978	1981	1982	1983
Grains						
Rye	-	369	-			
Buckwheat	-	-	-			
Wheat	-	-	2,605		85,050	56,701
Barley	-	-	-		149,454	26,286
Oilseeds						
Flaxseed	-	-	6,217	297	604	1,817
Soya Beans	-	-	-	-	-	18
Sunflowerseed	-	-	-	597	1,033	509
Mustardseed	-	-	252	-	-	-
Feeds						
Rapeseed Cake	-	-	5,699	4,058	-	-
Alfalfa	-	187	6,163	7,834	1,386	2,395
Vegetable Oils						
Rapeseed Oil	-	-	-	-	3,017	2,800
Other Vegetable Oils	-	-	-	-	-	50

SOURCE: Statistics Canada - 65202

TABLE 39

TAIWAN

Canadian Exports to Taiwan

(Value - $000)

	1972	1975	1978	1981	1982	1983
Grains						
Rye	-	32	-			
Buckwheat	-	-	-			
Wheat	-	-	414	-	17,511	11,339
Barley					24,123	3,554
Oilseeds						
Flaxseed	-	-	1,831	119	264	596
Soya Beans	-	-	-	-	-	10
Sunflowerseed	-	-	-	321	673	328
Mustardseed	-	-	80	-	-	-
Feeds						
Rapeseed Cake	-	-	821	792	-	-
Alfalfa	-	19	865	1,309	198	455
Vegetable Oils						
Rapeseed Oil	-	-	-	-	1,491	1,311
Other Vegetable Oils	-	-	-	-	-	66

SOURCE: Statistics Canada - 65202

TABLE 40

Canadian Share of Taiwan's Food Imports

1982

(US$ 000)

	Global Total	Canadian Share	%	Growth Over Previous Year
All Taiwan Imports	18,888,374	316,407	1.7	18.0
Farm Products	1,709,076	43,048	2.5	828.9
Barley	67,082	21,227	31.6	0.0
Wheat	143,789	18,209	12.7	0.0
Oil Crops	13,006	397	3.1	-21.9
Livestock & Poultry	102,633	589	0.6	-30.8
Meat	109,471	20,003	18.3	45.3

SOURCE: Two-Way Trade Statistics between Canada and the Republic of China, Board of Foreign Trade Ministry of Economic Affairs, Taiwan, 1983.

APPENDIX A

Income Elasticities of Demand

Meats, Fats and Oils

HONG KONG		Elasticity Estimate	R^2
Time Series			
1970 - 1981	log meat imports/log per capita income	1.0582	0.97
	log meat supply/log per capita income	0.5203	0.87
1970 - 1980	log meat supply/log per capita income	0.5835	0.90
	log fats and oils supply/log per capita income	0.6800	0.95
Cross Section			
1979 - 1980	log expenditure on meat/log total household expenditure	0.6710	0.95
	log expenditure on fats and oils/ log total household expenditure	0.6803	0.89
1973 - 1974	log expenditure on meat/total household expenditure	0.5743	0.99
	log expenditure on fats and oils/ log total expenditure	0.3180	0.49
JAPAN			
Time Series			
1965, 1970, 1973-1981*			
	log meat supply per capita/log per capita consumption expenditure	1.3212	0.97
	log meat supply per capita/log per capita GNE	1.1537	0.89
	log fats and oils supply per capita/log per capita consumption expenditure	1.0061	0.87
	log fats and oils supply per capita log per capita	0.8990	0.90

* Japan food supply based on Demand and Supply of Food, Japan Statistical Yearbook, Prime Minister's Office.

Income Elasticities of Demand

Meats, Fats and Oils

KOREA		Elasticity Estimate	R^2
Time Series			
1970 - 1981	log per capita meat supply/log per capita income	1.3022	0.96
	log per capita vegetable oil supply/log per capita income	2,3577	0.44
Cross Section			
1973	log meat and fish household expenditure/log total household expenditure	0.3984	0.76
1978	log meat and fish household expenditure/log total household expenditure	1.0200	0.98
1980	log meat and fish household expenditure/log total household expenditure	0.84	0.98

SOURCES: Supply and Trade figures: FAO Production and Trade Yearbooks

Cross Section Expenditure figures: Review of Food Consumption Surveys; FAO Food and Nutrition Paper 1/2 and 27, FAO, Rome, 1977 and 1981.

1973-74, 1978-79	Hong Kong: Estimated Household Food Expenditures Hong Kong $ per household; biweekly.
1974,1976,1978,1979	Japan: Nationwide--Estimated Household Food Expenditures Yen per caput per year.
1973,1978,1979,1980	Korea: All Citits--Estimated Household Food Expenditures Won per caput per month.
1975	Taiwan: Estimated Household Food Expenditure 1,000NT $ per caput per year.

Income Elasticities of Demand

Cereals

		Elasticity Estimate	R^2
TAIWAN			
Cross Section			
1975	log income/log flour		
	all incomes n=35	0.5565	0.6932
	bottom 2/3 n=23	0.4791	0.6107
	bottom 1/3 n=11	0.3575	0.1562
JAPAN			
Cross Section			
1979	log total expenditures/log bread n=18	0.4523	0.80
	log total expenditure/log flour, noodles	1,149	0.16
KOREA			
Cross Section			
1979	log income/log cereals	0.2519	0.94

Income Elasticities of Demand

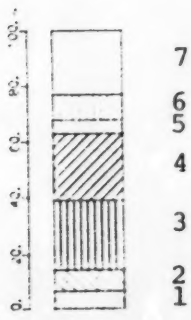
Meals Away From Home

		Elasticity Estimate	R^2
HONG KONG			
Cross Section			
1978 - 1979	log expenditures on meals away/ log total household expenditure	0.9469	0.97
JAPAN			
Cross Section			
1974	log expenditure on meals away/ log total household expenditure	1.4766	0.94
1979	log expenditure on meals away/ log total household expenditure	1.0976	0.95
KOREA			
Cross Section			
1979	log expenditure on meals away/ log total household expenditure	1.8311	0.98
1980	log expenditure on meals away/ log total household expenditure	1.4432	0.98

NOTE: Data for Taiwan is not available

SOURCES: Review of Food Consumption Surveys, Food and Nutrition, Paper 27, FAO, Rome, 1981.

Detailed figures are not available for expenditures by food types except for Japan. These are illustrated in the following table.

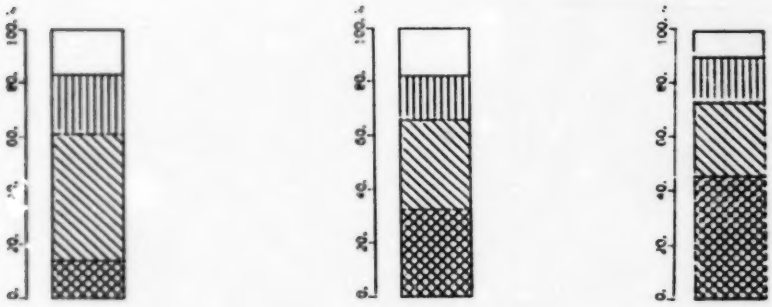


			%	
7		4,816	6.8	1. Japanese noodles
6		5,504	7.8	2. Chinese noodles
5		17,499	24.7	3. Sushi
4		16,869	23.8	4. Chinese and other Japanese meals
3		3,564	5.0	5. Western meals
2		6,370	9.0	6. Other refreshments
1		16,285	23.0	7. School lunch
	TOTAL	70,907	100.0	

APPENDIX B

Proportion of Household Expenditure by Meat Type

	Hong Kong	Japan	Republic of Korea
	%	%	%
Beef	14.1	32.6	46.1
Pork	47.2	33.0	26.9
Chicken	21.9*	16.6	17.0
Other	16.9	17.9**	10.0



* Fresh

** Includes bacon, ham and sausage

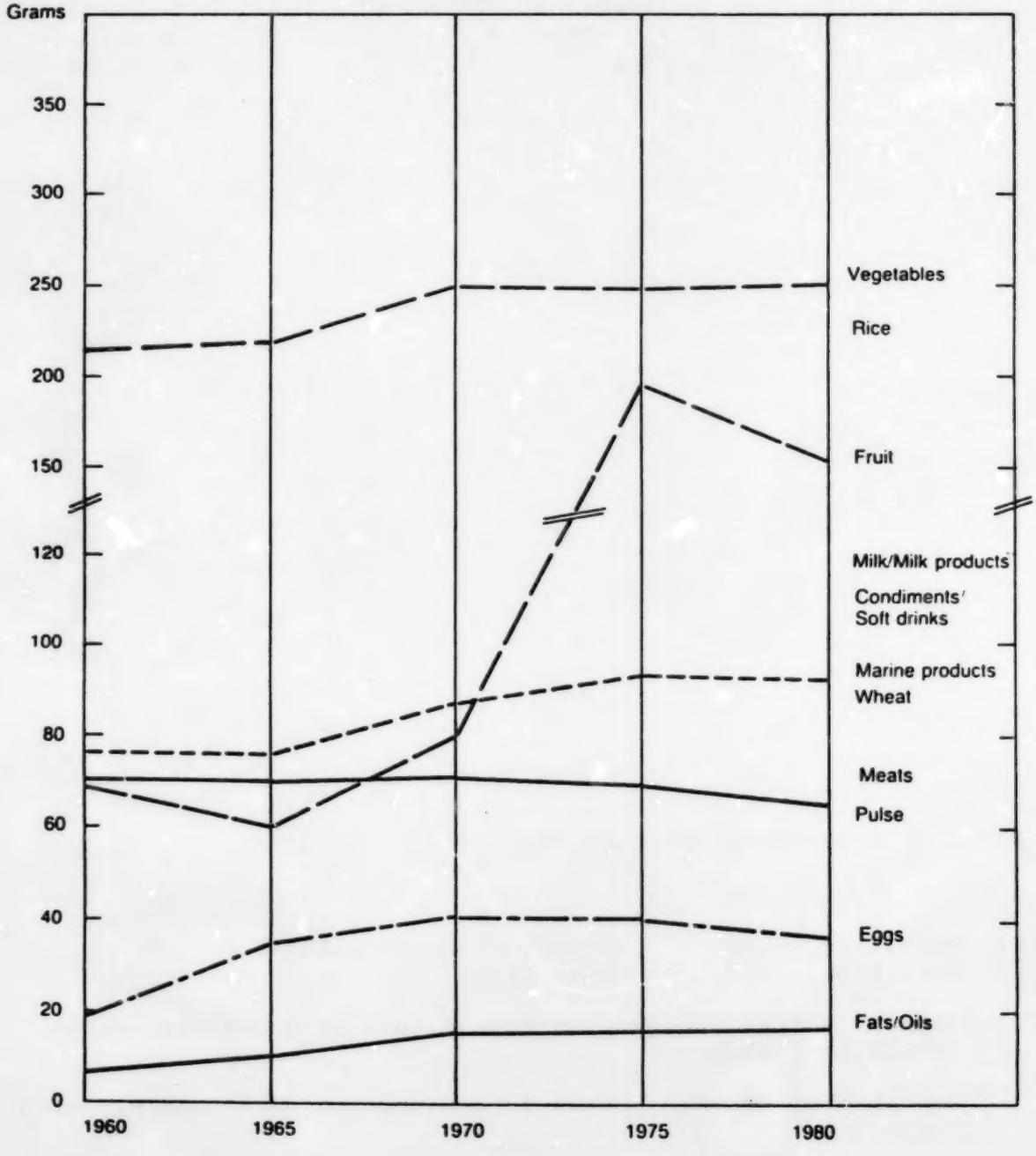
SOURCE: Hong Kong Household Expenditure Survey, FAO Food and Nutrition, Paper 27, Rome, 1983.

Japan: Actual Consumption Expenditure by Household, Japan Statistical Yearbook

Republic of Korea: Household consumption Expenditure, Korea Yearbook.

JAPAN

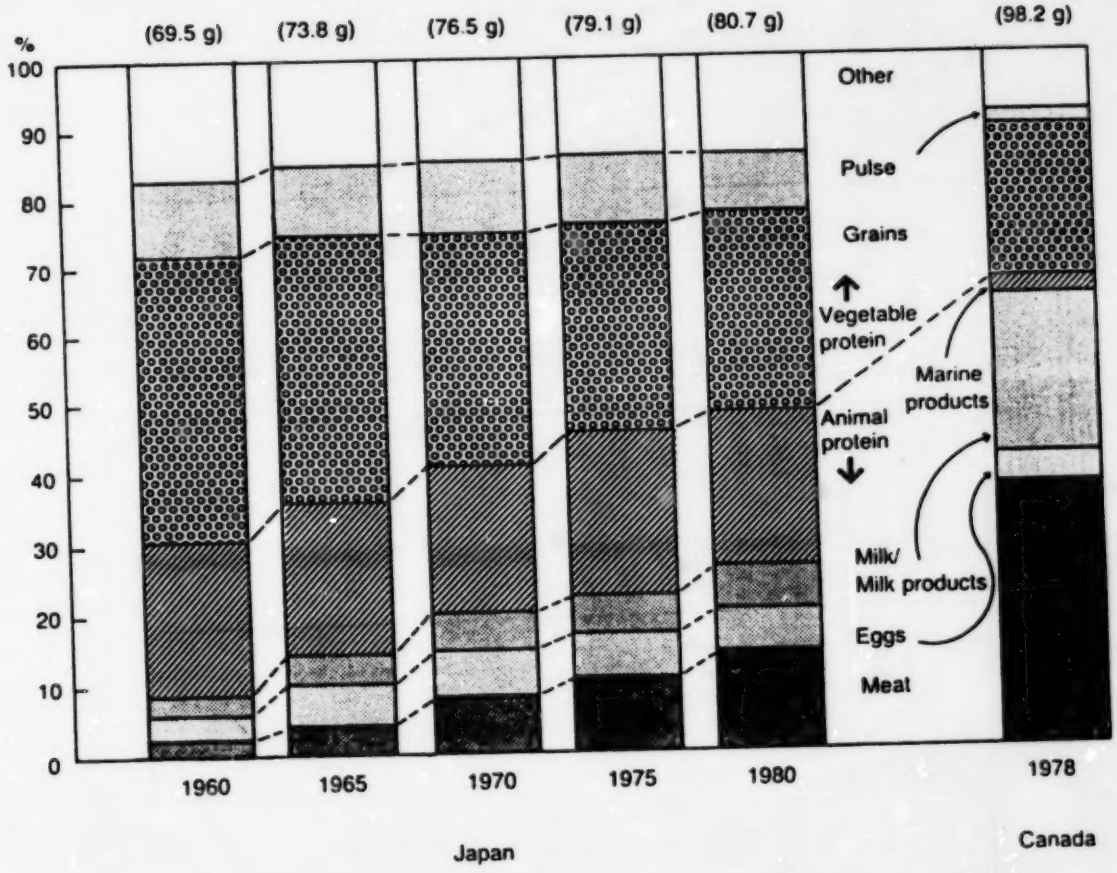
Daily Intake of Main Foods Per Capita



Source: Ministry of Agriculture, Fishery and Forestry

JAPAN

Daily Protein Supply per Capita



Source: Ministry of Agriculture, Fishery and Forestry

Japan: Food Consumption Per Capita

1964 and 1978

	Kilograms/year		Grams/day		Calories/day		Proteins Grams/day		Fats Grams/day	
	1964	1978	1964	1978	1964	1978	1964	1978	1964	1978
Cereals	32.6	35.2	89.4	96.4	311	338	10.4	11.0	1.4	1.5
Rice	116.2	81.8	318.3	224.1	1146	807	21.3	15.0	2.2	1.6
Sugar and Sugar Products	17.6	25.1	48.4	68.9	185	264	-	-	-	-
Potato and Starch Food	31.5	27.4	86.2	75.1	129	128	2.9	3.0	0.2	0.2
Pulses and Nuts	29.3	25.3	80.3	70.7	137	120	12.8	11.8	3.9	4.0
Vegetables	104.6	115.1	286.6	315.4	63	69	4.0	4.4	0.6	0.6
Fruit	28.5	40.5	78.1	111.0	36	51	0.4	0.6	0.2	0.3
Meat	12.0	29.1	33.0	79.8	76	206	4.4	9.8	6.3	18.1
Eggs	12.1	16.6	33.1	45.5	48	66	3.6	5.0	3.4	4.7
Milk and Milk Products (excluding butter)	20.5	36.1	56.2	99.0	53	91	3.2	5.7	2.4	4.5
Fish, molluscs and crutaceans	24.7	38.0	67.8	104.1	73	107	10.8	15.8	3.2	4.7
Oil and Fats (fat content)	6.8	13.3	18.6	36.3	164	321	-	-	18.6	36.3
All Items					2421	2568	73.8	82.2	42.6	76.7
Crop Products					2128	2031	51.8	45.8	22.3	36.9
Animal Products					292	537	22.0	36.3	20.2	39.8

SOURCE: OECD. Food Consumption Statistics 1964-78

Canadian Exports to Japan
Food and Fish (Canadian $000 FOB)

	1975	1977	1978	1979	1980	1981	1982
Live Animals	1,257	3,371	4,649	5,498	6,374	5,069	4,891
Dairy cattle	580	1,450	3,199	4,287	3,932	2,757	1,967
Cattle	4	478	457	448	667	927	875
Baby chicks	652	1,088	830	680	1,113	1,351	1,825
Meat & Meat Preparations	71,994	103,949	141,434	154,205	145,982	207,036	227,155
Beef	1,491	3,310	5,139	9,440	11,294	14,019	12,720
Pork	67,860	98,866	129,696	134,913	125,144	179,528	201,242
Horse meat	1,534	3,125	4,395	7,443	8,088	11,107	10,954
Fancy meat	882	1,166	1,703	1,406	1,115	2,218	1,914
Fish & Fish Products	39,201	142,065	245,404	254,427	110,242	171,869	236,285
Fresh bluefin tuna	268	2,223	2,067	1,723	1,476	1,127	—
Salmon	2,153	12,193	58,245	26,844	12,226	26,593	59,222
Herring	3,360	10,257	1,196	5,405	6,039	17,144	10,811
Freshwater smelt		1,937	2,626	1,867	2,647	4,379	7,965
Sea fish		844	2,607	7,122	11,839	8,600	7,903
Clams		44	88	1,813	2,936	2,272	4,583
Squid	n.a.	n.a.	n.a.	18,128	17,171	1,656	607
Shellfish (including squid to 1978)		7,702	28,552	881	571	2,990	2,076
Herring roe	24,273	87,296	115,723	167,667	36,268	73,870	75,513
Salmon roe		n.a.	n.a.	12,814	8,564	12,385	10,451
Fish roe — n.e.s. (mostly salmon roe up to 1978)	6,839	14,207	21,877	1,082	3,005	1,748	386
Dairy Products	534	7,973	10,053	5,470	4,614	3,778	21,641
Skim milk powder	500	7,345	7,084	3,853	2,655	694	16,706
Honey		362	81	380	292	166	99
Barley	125,462	94,285	90,215	104,035	97,397	191,577	136,066
Buckwheat	2,129	5,725	5,821	10,468	8,071	13,975	9,163
Rye	6,123	5,725	6,494	11,708	2,935	3,708	3,233
Wheat (including Durum)	250,780	174,399	190,950	287,784	303,075	354,442	290,529
Malt	17,490	22,740	27,330	26,688	31,906	37,155	43,126*
Processed Food — n.e.s.	2,422	4,817	8,929	13,225	13,119	18,183	19,631
Vegetables frozen	184	735	1,221	3,942	3,900	4,479	4,995
Vegetables dried		1,468	2,214	2,289	3,161	6,342	2,767
Maple products	253	425	526	1,452	1,157	719	805
Edible gelatin	622	821	1,436	1,545	1,457	731	599
Alcoholic Beverages	715	869	1,090	1,687	1,449	4,119	3,400
Whiskey	695	824	847	1,515	1,296	4,000	3,227
Feeds and Feedings	17,240	41,327	39,613	48,212	43,206	47,821	54,986
Wheat bran	4,235	10,583	6,860	9,279	5,294	9,305	8,155
Alfalfa, dehydrated	6,937	18,404	19,038	23,894	23,883	20,998	28,657
Pelleted screening	5,203	9,946	9,342	12,669	10,777	13,310	12,559
Fur, Hide and Skin — raw	4,194	6,142	5,629	11,965	7,880	5,323	7,451
Cattle hides — raw	2,852	3,466	2,743	5,996	3,943	2,886	4,387
Forage Crop and Grass Seed	353	1,318	1,343	1,078	1,274	1,199	861
Flaxseed	23,470	22,784	25,006	31,814	35,504	37,773	33,944
Mustardseed	2,983	2,702	2,750	2,094	2,902	2,813	3,450
Rapeseed	193,587	227,623	240,908	369,044	311,582	389,356	382,374
Soybeans	934	3,625	9,473	2,083	7,328	16,966	14,854
Tallow	3,601	10,432	11,336	18,288	18,481	18,401	19,418
Rapeseed Oil	1,744	3,594	7,787	5,998	6,212	11,374	6,333
Total Agriculture, Fisheries, and Food Products	767,080	901,226	1,080,207	1,371,611	1,168,646	1,558,456	1,531,020
Total Canadian Exports to Japan	2,115,093	2,504,005	3,051,210	4,089,491	4,370,465	4,485,375	4,571,228
	32.5%	36.0%	35.4%	33.6%	26.7%	34.7%	33.5%

* Includes corn meal and flour and wheat flour, nes.

SOURCE: Statistics Canada

TAIWAN

Per Capita Consumption of Principal Foods

(kilograms per year)

	1965	1970	1975	1980	1983*	1986*	1989*
Total	278.8	281.8	282.7	296.3	304.6	314.2	326.0
Grain	156.9	162.1	157.5	136.4	136.6	127.8	119.9
Rice	132.9	134.5	130.4	105.5	100.1	90.8	82.3
Wheat	22.3	25.4	24.3	23.6	26.1	26.4	26.7
Corn	1.7	2.2	2.8	7.3	10.4	10.6	10.9
Sweet Potatoes	48.3	18.1	10.2	4.1	3.6	2.8	2.2
Sugar	10.0	12.0	14.6	24.0	23.2	25.9	28.6
Soybeans	5.5	9.5	10.5	10.3	10.6	11.8	12.5
Meat	19.2	25.1	26.8	39.4	41.2	45.8	50.4
Pork	16.8	18.9	17.5	26.2	26.7	28.6	30.5
Beef	0.4	0.6	0.9	0.9	1.2	1.4	1.7
Poultry	2.0	5.6	8.4	12.3	13.3	15.8	18.2
Fish	27.7	34.2	35.6	38.7	39.9	41.8	43.7
Dairy	7.7	15.2	21.2	35.6	41.6	49.7	59.3
Eggs	2.4	4.1	5.2	8.0	8.4	9.4	10.3
	5.3	11.1	16.0	27.6	33.2	40.3	49.0
Vegetable Oil	3.5	5.6	6.3	7.8	7.9	8.6	9.4

* Estimates

SOURCE: East Asia, World Agricultural Regional Supplement Review of 1982 and Outlook for 1983, USDA ERS WAS 31, Supplement 2.

APPENDIX C

TABLE C-1

Selected East Asian Economies

Per Capita Meat Consumption

(Kilograms per person per year)

	1981	1990	1995
Japan	22.3	36.7	46.4
Korea	11.0	11.0	12.1
Taiwan	40.1	55.5	63.8
Hong Kong	64.1	102.1	124.6

SOURCE: Chart 1, and Tables 10 and 17

TABLE C-2

Selected East Asian Economies

Fats and Oils Consumption

(Kilograms per person per year)

	1981	1990	1995
Japan	14.6	25.8	32.7
Korea	4.5	18.7	33.6
Taiwan	11.7	14.4	15.4
Hong Kong	15.3	27.5	32.3

SOURCE: Chart 1, and Tables 10 and 18

TABLE C-3

Selected East Asian Economies

Cereals Consumption

(Kilograms per person per year)

	1981	1990	1995
Japan	111.9	139.0	149.8
Korea	202.6	209.8	204.1
Taiwan	137.8	190.5	205.2

SOURCE: Chart 1, and Tables 10 and 20

APPENDIX D

TABLE D-1

Selected East Asian Economies:
Average Annual Forecast Rates of Real
Demand Growth (LOW Scenario) 1980-1990,
and Total Consumption 1990

	Low Real GDP Growth Rate	Growth Rates of Per Capita Consumption			Total Consumption 1990 (million tonnes)		
		Meat	Fats & Oils	Cereals	Meat	Fats & Oils	Cereals
Japan	4.5	3.3	4.0	2.0	4.340	2.454	15.790
Korea, Rep. of	6.0	5.1	14.1	1.5	0.671	0.575	8.993
Taiwan	7.0	4.8	2.7	3.9	1.101	0.267	3.397
Hong Kong	8.0	5.0	5.4	n.a.	0.598	0.147	n.a.

NOTE: These forecasts are based on LOW scenario growth rates in combination with the lowest elasticities estimated from 1970's data. They are therefore the most pessimistic forecasts based on our methodology.

SOURCES: Tables 11, 16, 19 and Appendix A.

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